VOL. LXIII AUGUST, 1923 NEW SERIES VOL. 16, No. 5

JOURNAL
of the
American Veterinary Medical Association

FORMERLY

AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Assn.)

EDITED AND PUBLISHED FOR

The American Veterinary Medical Association

CONTENTS

Editorial 543
Coming Veterinary Meetings 560

Papers:
- The Pathology of Sterility in Cattle—W. L. Boyd 561
- Some Experimental Work in Hog Cholera—E. W. Porter 580
- Glanders and Bovine Infectious Abortion Complement Fixing Antibodies in Two Apparently Normal Horses—Fred Boerner, Jr. 591
- Diseases of Swine—Edw. A. Cahill 594
- An Epizootic of Aspergillosis in Chickens—John E. Guberlet 612

Clinic and Case Reports:
- Ventral Hernia and Peritonitis—E. D. King, Jr. 621
- Major Surgical Operation on a Parrot—J. Raymond Wells 622
- Hemorrhagic Septicemia in Mules—H. R. Church and E. L. Stubbs 624

Reviews 626
Abstracts 628

Association News:
- Proceedings of the Fifty-ninth Annual Meeting, American Veterinary Medical Association 631
- Other Meetings 633

Communications 653
Commencements 657
Army-Veterinary Service 664
Necrology 668
Personals 679
Miscellaneous 683

THE JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION is issued the first of each month. *Manuscripts and copy for insertion should be as nearly perfect as possible for the printer and should be received by the tenth of the preceding month to insure insertion in the next month's issue.* Volumes begin in April and October.

Communications relating to publication, subscription, advertisements and remittances for the JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, as well as matters pertaining to the American Veterinary Medical Association and membership, should be sent to Dr. H. Preston Hoskins, Secretary-Editor, 735 Book Bldg., Detroit, Mich.

$4.00 per annum Foreign $5.00; Canada $4.25 Single Copies 40 cts. in U. S.

Entered as Second-Class Matter, March 15, 1923, at the Post Office at Detroit, Mich., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917; authorized October 26, 1918.

Tie a String Around Your Finger

As a reminder that Camphosol stands out for its unusual adaptability at this particular time of the year. Camphosol is probably the most active preparation of Camphor available. Successful practitioners are using it subcutaneously, intravenously or intramuscularly in severe heat cases, milk fever, pneumonia, influenza, collapse and thumps.

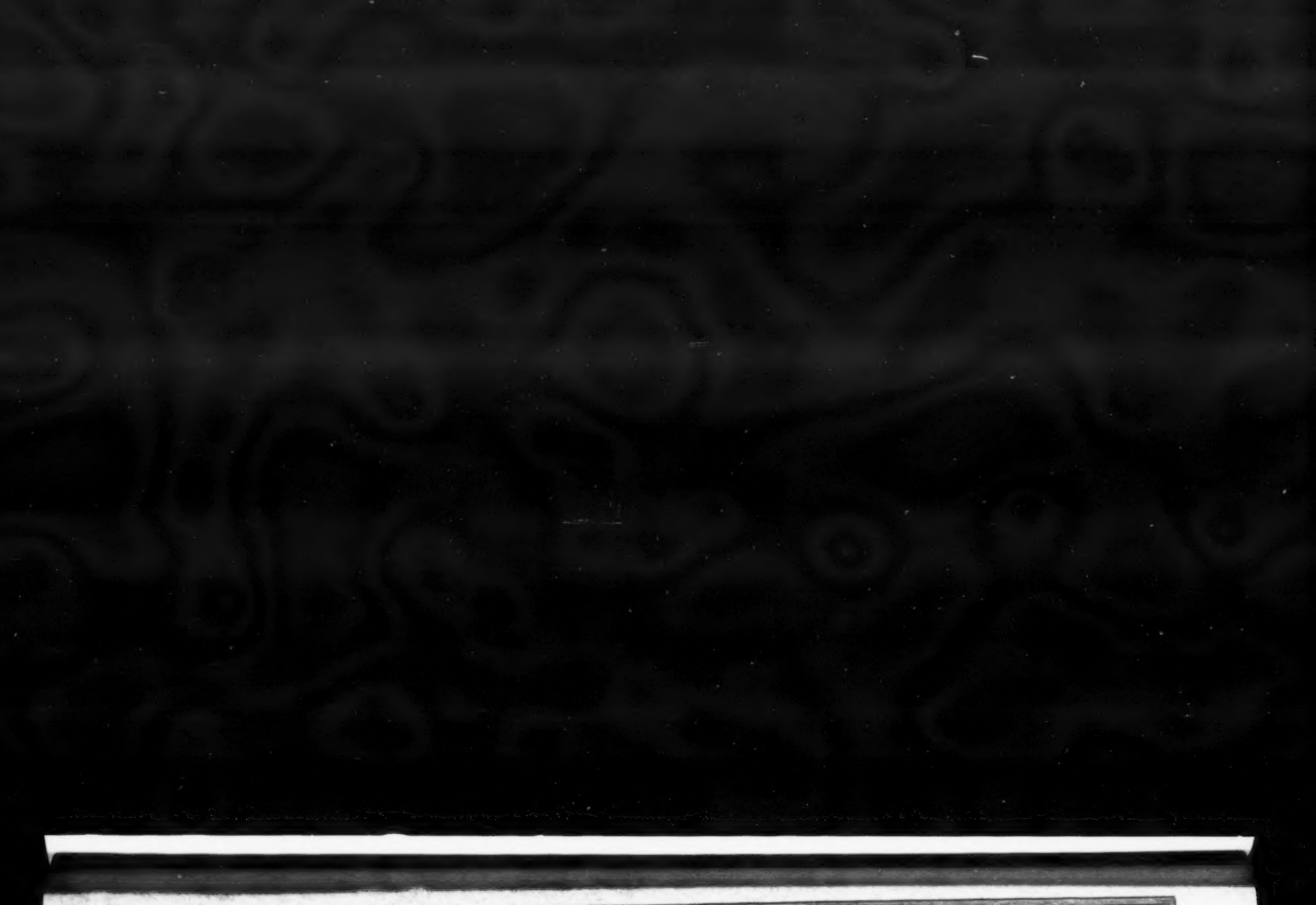
Camphosol in 250-cc bulk containers.....$1.00.

Tie a string around your finger as a reminder of the next time you are about to order your supply of bacterins and finer Veterinary Medicines.

Zell-Straub Laboratories

5514-20 Norwood Park Ave. Chicago, Ill.

Also Makers of Flavisol.

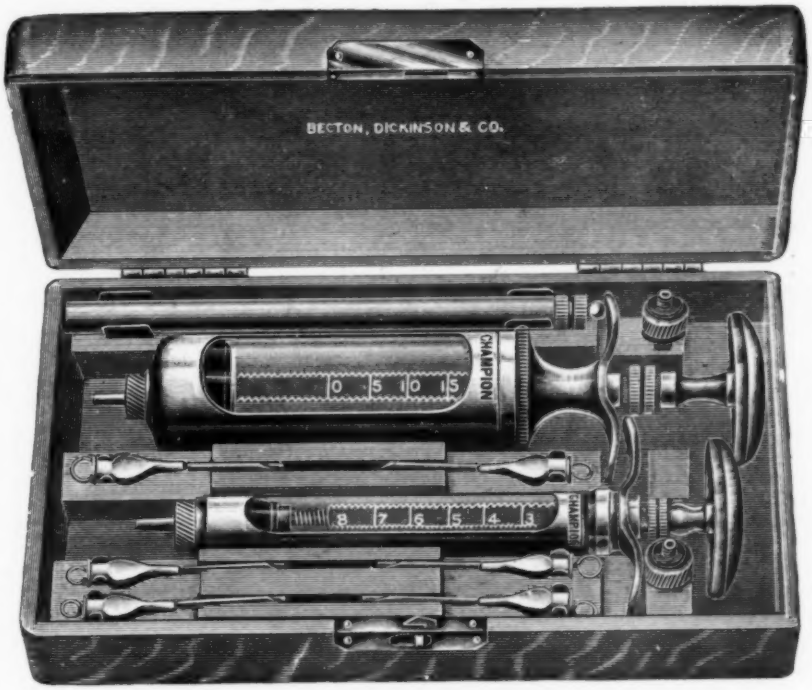


B-D PRODUCTS

Made for the Profession

CHAMPION
VACCINATING OUTFITS

for the simultaneous administration of serum and virus.



W-505-40-8T

The new CHAMPION vaccinating outfits are adapted to either one or two hand manipulation.

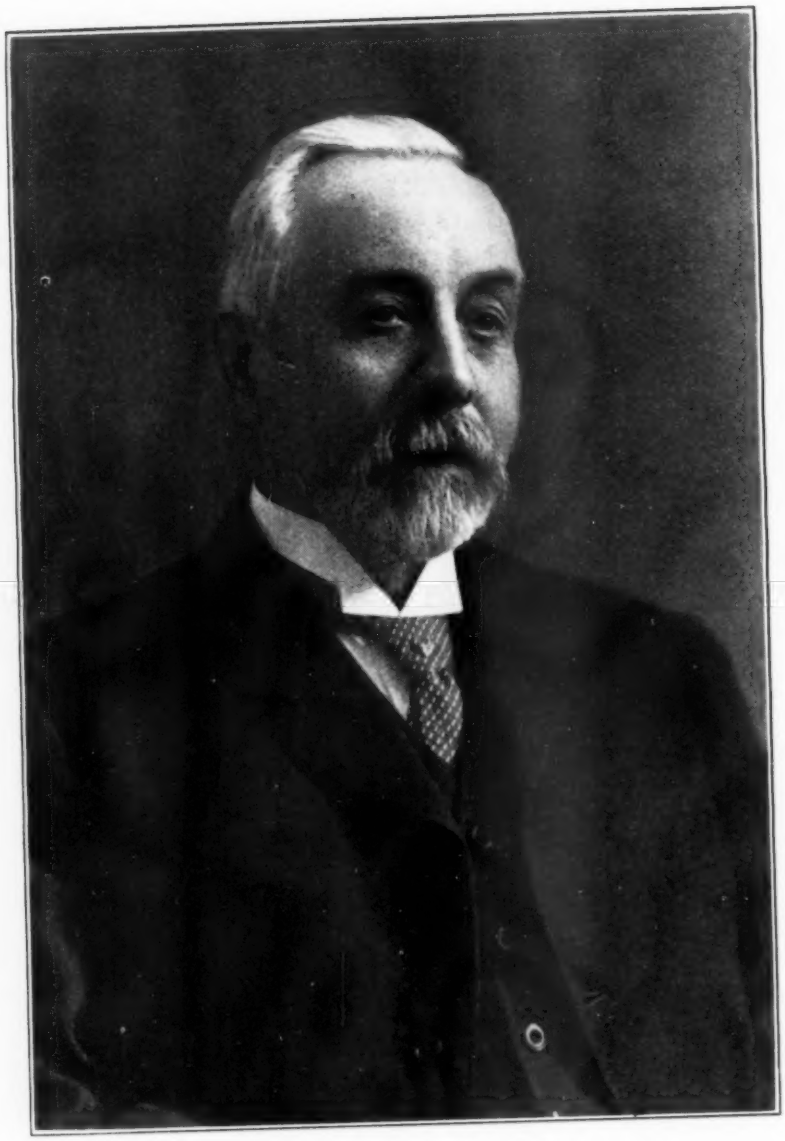
Send for our Veterinary Catalogue

Supplied through Dealers

BECTON, DICKINSON & CO.

RUTHERFORD, N. J.

Makers of B-D Veterinary Thermometers, CHAMPION Syringes and Needles, MONARCH Milking Tubes and B-D Cattle SPECIALTIES



DUNCAN McEACHRAN, LL. D., F. R. C. V. S.

JOURNAL

OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n.)

H. Preston Hoskins, Secretary-Editor, 735 Book Building, Detroit, Mich.

W. H. WELCH, President, Lexington, Ill. M. JACOB, Treasurer, Knoxville Tenn.

Executive Board

GEO. HILTON, 1st District; T. E. MUNCE, 2nd District; S. E. BENNET, 3rd District
J. A. KIERNAN, 4th District; C. E. COTTON, 5th District; B. W. CONRAD,
6th District; CASSIUS WAY, Member at Large, CHAIRMAN.

Sub-Committee on Journal

S. E. BENNETT J. A. KIERNAN

The American Veterinary Medical Association is not responsible for views or statements published in the JOURNAL, outside of its own authorized actions.

Reprints should be ordered in advance. Prices will be sent upon application.

Vol. LXIII, N. S. Vol. 16 **August, 1923** **No. 5**

ORMSTOWN P QUE

10th July 1923

In 1875, hale and hearty I was present at the Convention held at Philadelphia when the A V M A was about debuting.

To day although not feeling quite as well, nevertheless I see with pleasure the A. V. M. A. strong and prosperous, celebrate its "Diamond Jubilee" in Montreal, and I urge every Veterinarian to attend its meetings and help to carry on the good work to which I have devoted over fifty years of my life

"Vis Unita Fortior"

Duncan McEachran

ON TO MONTREAL

As the time for the Montreal meeting approaches, the signs more and more indicate that the 1923 gathering will be a memorable one. Marking, as it will, the sixtieth anniversary of the organization of the parent body, the United States Veterinary Medical Association, which, thirty-five years later brought forth a lusty youngster, the American Veterinary Medical Association, the Montreal convention is pregnant with possibilities.

Our Canadian brethren will leave nothing undone which might contribute to our pleasure while in their historic city. Of that we are amply assured. Distinguished international guests, through their presence, will add luster to the occasion. A glance at the literary program shows that a number of the leading lights of the veterinary profession in America will contribute their findings and the benefits of their experience and observations, at the several sessions, both general and sectional. The social side

of the program has not been overlooked, with the President's reception, the alumni gatherings, the banquet and the boat-ride.

But let us not forget that we are going to Montreal with a really serious purpose. There will be a business end to the program. Those who will not be able to attend the meeting will eagerly await a report of the transactions. The eyes of every practitioner will be on Montreal during the last week in August. They are expecting something to be done of distinct benefit to them, something to better conditions for them. Something will be done.

Our organization has occasionally been censured, sometimes unfairly, for things that have been left undone. There is entirely too much of the perfectly natural tendency to forget or to overlook the great amount of constructive work that has been done by our Association in the past. But these accomplishments of the past are the very best standards we have by which we may judge of what we can bring to pass in the future.

We have had a *purpose* ever since we were organized. It is plainly stated in the preamble of our Constitution. We are about to have a *policy*, something that we apparently have been content to get along without. With a definite policy decided upon, the next thing, and much more important, is a *program* for carrying out our policy.

As someone has so pertinently put it, this is a period of publicity, press-agents and propaganda. The statement was recently made to the effect that the veterinary profession has received more favorable publicity, during the past six months, than at any time in the past. This publicity will be for naught unless we continue to deserve it. We must keep this constantly in mind. We are the servants of the owners of the live stock in our respective communities. Upon their prosperity largely depends our well-being. Without a live stock industry there would be no need of a veterinary profession.

If we have any differences among ourselves, let us discuss and settle them among ourselves. Even though, as is so often said, our Association is made up of many different groups,—practitioners, Bureau men, State men, college men, army men, laboratory men, commercial men,—let us not forget, that as veterinarians, we have a common purpose, after all.

We Want 5000 Members This Year.

THE CONVENTION CITY OF 1923

Montreal, the largest and wealthiest city in Canada and the commercial metropolis of the Dominion, is situated on an island of the same name at the confluence of the St. Lawrence and Ottawa rivers. It is at the head of ocean navigation on the St. Lawrence, 936 miles from the Atlantic, a seaport city nearly a thousand miles inland! In 1535 the site of the present city was visited by Jacques Cartier, who found a populous Indian village of the Huron-Iroquois tribes known as Hochelaga. Climbing the mountain, he was so charmed by the prospect that he gave the place its name of Mount Royal—the Montreal of today. In 1611 the French, under Champlain, planted their first post on the Island where the Montreal Custom House now stands, and called it "La Place Royale." In 1642 Monsieur de Maisonneuve founded it as a city.

The city is rich in historical associations but it is not within the scope of this short article to trace the past—the Montreal of today is a busy, thriving city of nearly 900,000 population. It is the gateway for a nation's commerce. Fine wharves, mammoth grain elevators and a well-dredged channel have made it one of the finest harbors in the world, and as a port of departure for European travellers it has the unique distinction of affording the shortest route to Europe, there being only 4½ days of open water by this route. For nearly a thousand miles the voyager is in the land-locked waters of picturesque river and gulf, and when the

dim outlines of the fading shores mark the conclusion of the wonderful panorama, the fascinating journey is one-third over.

Visitors to Montreal may spend days sight-seeing and taking in the various points of interest throughout the city. Some of these are:

The Harbor.
Custom House.
Redpath Museum.
Dominion Square.
Lafontaine Park.
Laval University.
Mount Royal Park
Bank of Montreal
McGill University.
St. James Cathedral.
St. George's Church.
Strathcona Monument.
Jacques Cartier Square.
Victoria Jubilee Bridge.
Government Grain Elevator.
Admiral Nelson's Monument.
City Hall and Court House.
Art Gallery, Sherbrook St.
Site of La Salle's Residence.
Notre Dame de Lourdes Chapel.
Statue of Queen Victoria, Victoria Square.
Canadian Northern Tunnel under Mount Royal.

Grand Cathedral of Notre Dame, second largest church on this Continent and the largest bell in America.

Chateau de Ramezay, residence of French and British Governors, and headquarters of the American Army, 1775.

Landing Place of Paul de Chomedy, Sieur de Maisonneuve, and the first founders of Montreal in 1642.

TWENTY-FIVE YEARS AGO

On the thirty-fifth anniversary of the United States Veterinary Medical Association was born the American Veterinary Medical Association at Omaha. It enters upon its career in the height of manhood, at the zenith of National Association power. The history of the United States Veterinary Medical Association has been made and recorded, and with many trials and vicissitudes counted among its experiences, yet the Association under its new name owes all its acquired strength and power to its parent. Reared and fostered in the earliest history of veterinary science in our land, it has counted among its list of members the strongest and most progressive members of the profession. On its roll of membership may be found the names of those who have led in the roll of advancement and progress in every aspect of our professional progress.

In teaching, in higher professional attainment, in the field of surgery and medicine, in journalism, in the building up of American veterinary literature, her members have attained honor, fame and renown, and these priceless records fall to the heirship of the new and broader Association. This history, these records of work well done, these achievements of our profession in nation, state and city, come to the Association of the future, charged with weighty responsibilities for us to carry and discharge with equal fidelity. Well it is that we can say and feel that in the All Americas now to make up our organization, the strength in numbers and in individual power never was greater and more united in the common purpose that keeps us together—of bettering our profession; and the future will, as surely as the passing of the noonday sun of to-morrow, write on its pages a record of greater advancement, progress and power.

Let the veterinarians of the All Americas now add their strength and worth to the American Veterinary Medical Association, and veterinary sanitary science, surgery, medicine, education, journalism and allied branches of our work will move forward with rapid strides and fittingly close the work of the nineteenth century. (*Editorial reprinted from the Journal of Comparative Medicine and Veterinary Archives, September 1898*).

Plan To Go To Montreal, August 27-31.

OUTLINE OF PROGRAM

MONDAY, AUGUST 27, 1923

MORNING —General session. Address of Welcome. Response. President's address.
AFTERNOON—General session. Reports of Executive Board, Officers and Committees. Election of new members.
EVENING —President's Reception.

TUESDAY, AUGUST 28, 1923

MORNING —Sectional meetings.
AFTERNOON—General session. Reports of Committees. Election of officers. Meeting of Women's Auxiliary.
EVENING —Meeting of college alumni associations, clubs, etc.

WEDNESDAY, AUGUST 29, 1923

MORNING —Joint session of Sections on Education and Research and Sanitary Science and Police. Clinic, Section on General Practice.
AFTERNOON—Clinic continued.
EVENING —Banquet.

THURSDAY, AUGUST 30, 1923

MORNING —General session. Papers and addresses.
AFTERNOON—Trip to MacDonald College, by special train.
EVENING —Moonlight Excursion on St. Lawrence River.

FRIDAY, AUGUST 31, 1923

MORNING —Sectional meetings.
AFTERNOON—General session. Reports. Unfinished business. Installation of Officers. Adjournment.

Does Your Wife Know About The Women's Auxiliary?

PAPERS

TUESDAY MORNING, AUGUST 28, 1923

SECTION ON SANITARY SCIENCE AND POLICE

Chairman's Address, Dr. R. C. Reed, College Park, Md.
Secretary's Report, Dr. Orland Hall, Ottawa, Canada.
"The Practical Value of Serological Tests in the Control of

Infectious Abortion," by Dr. J. W. Connaway, University of Missouri, Columbia, Missouri.

"Excessive Pig Losses Can be Prevented," by Dr. A. T. Kinsley, Kansas City, Missouri.

"The Control of Internal Parasites of Swine," by Dr. Maurice C. Hall, Zoological Division, Bureau of Animal Industry, Washington, D. C.

SECTION ON GENERAL PRACTICE

Chairman's Address, Dr. H. E. Kingman, Fort Collins, Colo.

Secretary's Report, Dr. Harry Caldwell, Wheaton, Ill.

"Cesarian Section in the Cow," by Dr. T. H. Ferguson, Lake Geneva, Wis. Discussion to be opened by Dr. H. E. Bemis, Ames, Iowa.

"Cervical Surgery," by Dr. W. W. Williams, Springfield, Mass. Discussion by Dr. A. Savage, of Winnipeg, Manitoba.

"Sterility of Mares," by Drs. W. W. Dimock and E. A. Caslick, University of Kentucky, Lexington, Ky.

SECTION ON EDUCATION AND RESEARCH

Chairman's Address, Dr. L. W. Goss, Columbus, Ohio.

Secretary's Report, Dr. E. M. Pickens, College Park, Md.

"Veterinary Science as Taught in Quebec," by Dr. F. T. Daubigny, University of Montreal, Montreal, Quebec.

"Veterinary Education and Practice in Scandinavia, with Special Reference to Norway," by Dr. H. J. Stafseth, Michigan Agricultural College, East Lansing, Michigan.

"Veterinary Education," by Dr. C. J. Marshall, University of Pennsylvania, Philadelphia, Pa.

WEDNESDAY MORNING, AUGUST 28, 1923

JOINT SESSION

SECTION ON SANITARY SCIENCE AND POLICE

AND

SECTION ON EDUCATION AND RESEARCH

"Hog Cholera Control *vs* Prevention," by Dr. I. K. Atherton, U. S. Inspector in charge of Hog Cholera work, College Park, Md.

"A Study of Rabies from the Standpoint of Etiology," by Capt. R. A. Kelser, Army Medical School, Washington, D. C.

"Controlled Vaccination Experiments on Cattle with Bacterium

Abortus," by Drs. G. H. Hart and C. M. Carpenter, University of California, Berkeley, California.

"The Injection of Cattle with B. Tuberculosis (Avian) and Results of Subsequent Tuberculin Tests," by Drs. Cecil Elder and A. M. Lee, Wyoming Agricultural Experiment Station, Laramie, Wyo.

THURSDAY MORNING, AUGUST 30, 1923

General Session

"The Practitioner as the Foundation of Veterinary Service," by Dr. E. R. Steel, Grundy Center, Iowa.

"Some Laboratory Findings and Conclusions Regarding the Bang Abortion Organism which Puzzle Clinicians," by Dr. W. L. Williams, Ithaca, N. Y.

"The Challenge to the Veterinary Profession," by Dr. R. L. Conklin and Prof. H. Barton, MacDonald College, Quebec.

Address: Hon. Senator G. Boyer, Rigaud, Quebec.

"Corpus Luteum of the Ox Ovary in Relation to the Estrous Cycle," by Drs. H. S. Murphey and G. W. McNutt, Iowa State College, Ames, Iowa.

"Studies of the Estrous Cycle of the Ox," (Second paper) by Dr. H. S. Murphey, Iowa State College, Ames, Iowa.

FRIDAY MORNING, AUGUST 31, 1923

Section on Sanitary Science and Police

"A New Disease of Cattle Simulating Hemorrhagic Septicemia and Blackleg, Due to Damaged Sweet Clover," by Dr. Frank W. Schofield, Ontario Veterinary College, Guelph, Ontario.

"No-Lesion Tuberculin-Reacting Cattle," by Dr. E. C. Schroeder, Bureau of Animal Industry Experiment Station, Bethesda, Md.

"The Serum Therapy of Glanders, with Special Reference to Glanders in Man," by Dr. E. A. Watson, Health of Animals Branch, Dept. of Agriculture, Ottawa, Ontario

Election of officers.

Adjournment.

Section on General Practice

"Post-Vaccination Trouble," by Dr. Edward A. Cahill, Zionsville, Ind. Discussion by Drs. A. T. Kinsley, Kansas City, Mo., and R. R. Birch, Ithaca, N. Y.

"Anesthesia, General and Local," by Drs. H. E. Bemis, W. F. Guard, and C. H. Covault, Iowa State College, Ames, Iowa. Discussion by Drs. R. R. Dykstra, Manhattan, Kans., and O. V. Brumley, Columbus, Ohio.

"Mastitis; Its Etiology and Pathology," by Dr. G. E Jorgenson Clermont, Iowa. Discussion by Dr. L. A. Klein, Philadelphia, Pa.

Election of officers.

Adjournment.

SECTION ON EDUCATION AND RESEARCH

"The Source of Infection in Primary Outbreaks of Hog Cholera," by Dr. I. K. Atherton, U. S. Inspector in charge of Hog Cholera Work, College Park, Md.

"Bacteria of the Genital Tract of Mares and the Semen of Stallions, and their Relation to Breeding Efficiency," by Dr. W. W. Dimock, University of Kentucky, Lexington, Ky.

"Bacterium Pullorum Infection in Baby Chicks and Adult Fowls," by Dr. B. A. Gallagher, Pathological Division, Bureau of Animal Industry, U. S. Dept. of Agriculture, Washington, D. C.

"The Pathology of Posterior Paralysis in Pigs," by Dr. S. A. Goldberg, New York State Veterinary College, Ithaca, N. Y.

Election of officers.

Adjournment.

Have You Secured One New Member This Year?

IF YOU DRIVE TO MONTREAL READ THIS

If you are planning to motor to Montreal be sure that you have with you your license and registration card of the car which you drive. It will be necessary to secure a touring permit, at the point where you enter Canada. Such permits are good for thirty days and cost 50c each. A certificate of ownership of your car is not necessary, if you have your license and registration card, together with touring permit. If, for any reason, you do not plan to leave Canada, at the same point where you enter, it will be necessary for you to secure "clearance papers" at the point of entry.

IF YOU ARE GOING TO MONTREAL BY RAIL READ THIS

The Certificate Plan has been granted, but is contingent upon at least 250 of those in attendance at the meeting traveling by rail and securing certificates. These certificates should be requested when you purchase your ticket *going* to Montreal. Said certificates should be requested regardless of whether you intend to avail yourself of the reduced fare returning, and regardless of whether you intend to return home by the same route as that selected going to Montreal.

For members and visiting veterinarians attending the convention, as well as dependent members of their families, who have paid normal, one-way fares (tariff fares of 67 cents or more) on the going trip, via routes over which one-way tickets are regularly sold, will be ticketed to their starting points by the route traversed in going to the convention, at one-half of the normal one-way fare from Montreal to original starting point.

Certificates will show the purchase of tickets not earlier than dates specified by the various passenger associations, and when validated by special agent, will be honored for return ticket at one-half of the normal one-way fare, if presented not later than September 4th.

The word "Convention" will be stamped or written across the face of contracts and each coupon of all tickets sold for the return of persons attending the meeting, for which a reduced fare was authorized on the certificate plan.

Arrangements have been made to validate certificates on Wednesday, August 29th, and Thursday, August 30th. The reduced fare for the return journey will not apply unless holder of certificate is properly identified, as provided for by the certificate. Such identification will be made by the Secretary, Dr. H. Preston Hoskins, at the convention.

Secure your certificate when you purchase your ticket, and turn it over to the Secretary when you register at the meeting.

Have You Secured One New Member This Year?

BIDS FOR FUTURE MEETINGS

1924—Des Moines, Iowa.
1925—Portland, Oregon.
1926—Philadelphia, Penna.

FORTY YEARS A MEMBER

With the celebration of the sixtieth anniversary of the American Veterinary Medical Association so near at hand it seems particularly appropriate to pay a tribute at this time to a member who has been on the roll for forty years, two-thirds of the period of existence of our great organization, and during which time he has maintained a keen and active interest in the welfare of the Association and its affairs.

Dr. Benjamin D. Pierce, of Springfield, Massachusetts, joined the A. V. M. A., at the meeting in Boston, in 1883, and has been

DR. BENJAMIN D. PIERCE

a familiar figure at many of the meetings held since that time in all parts of the country. He not only attends the A. V. M. A. conventions, but he is a fairly regular attendant at the Cornell Conferences, the United States Live Stock Sanitary Association meetings in Chicago, Tuberculosis Conferences, and similar gatherings.

Born in Worcester, Mass., March 9, 1859, he moved to Springfield in 1865, and has been a prominent figure in Springfield affairs ever since. He graduated from the Montreal Veterinary College in March, 1881. Two months later found him enrolled

as a student at Dick's Royal Veterinary College, Clyde Street, Edinburgh. In July, 1882, he obtained the degree of Member of the Royal College of Veterinary Surgeons and returned to America.

Dr. Pierce served as Veterinary Surgeon with the Fifth Cavalry of the United States Army, from 1884 to 1889, and saw some strenuous service on the Western frontier. He is well remembered by some of the older members of the profession as having been the first American veterinarian to go across the Atlantic with a consignment of horses for the British Government. Upon his return he was besieged with inquiries from his colleagues as to the advisability of making similar trips. His invariable reply was: "If you can in any way arrange your affairs so that you can make the trip, surely do so." Those who took Dr. Pierce's advice have never regretted it.

Since 1891 Dr. Pierce has been in practice at Springfield. He is a splendid example of the type of veterinarian who has made our profession what it is today. When Dr. Ferneyhough, at the meeting in St. Louis last summer, characterized the private practitioner as the salt of our profession, he had such men as Ben Pierce in mind, and in presenting his photograph in this issue we are following up the suggestion made at that time in this regard. It is much more pleasant to say a good word for a deserving member, while he is here to enjoy it, than to "say it with flowers."

THE 1922 PROCEEDINGS

In this issue we publish the final installment of the proceedings of the meeting held in St. Louis, last year. The papers read at that meeting, and since published in our JOURNAL, have occupied approximately 350 printed pages. The business transactions and committee reports have taken up about 285 pages, a total of 635 pages, or almost equivalent to five full issues of the JOURNAL.

It is to be hoped that our members fully appreciate the value of these proceedings. In them are to be found a number of very valuable papers, prepared and presented by experts in their various fields. These papers in many cases contain information and data not available elsewhere. Frequently we have requests for copies of these papers many years after they have been read. It will pay you to preserve them.

NOMINA ANATOMICA VETERINARIA

Under the above title the report of the Committee on Revision of Veterinary Anatomical Nomenclature has been published. We can call attention to this splendid work in no better way than by quoting the introduction to the report.

"No one who is aware of the facts will deny that veterinary anatomical terminology is still in a chaotic state in this country. There are more than 15,000 names in more or less common use to designate about 5,000 structures. This multiplicity of terms is due largely to the ignorance and carelessness of non-anatomical writers and translators of foreign works.

"Recognising the seriousness of the situation, the American Veterinary Medical Association, at the Toronto meeting in 1911, voted the appointment of a Committee on Revision of Veterinary Anatomical Nomenclature. The lists of names contained in this pamphlet are the results of the labors of the original committee and its successors.

"In order to remove a rather common misapprehension it should be said that this is not a 'new' nomenclature. The number of new names in it is so small as to be practically negligible. On the other hand the revision has been carried on in consistent adherence to the principle of eliminating the great mass of synonyms under which the science of Anatomy is staggering.

"The intrinsic merits of any scientific nomenclature properly determine how quickly and generally it is adopted. The necessary qualities are precision, logical coherence, and utility. It should be accorded fair trial by those to whom it is recommended by the anatomical workers of our profession, after long and conscientious effort; it should not be permitted to fail because of prejudice and inertia on the part of others. The cooperation of teachers, writers and workers in other branches is essential if students and the younger members of the profession in particular are to be relieved of the present serious and unnecessary burden of confusing synonyms and obsolete anatomical names. It should be definitely agreed that the terminology in any branch of science shall be determined by those competent in that field."

This report should be the hands of every teacher of veterinary anatomy the world over. Members of examining boards would do well to have a copy at hand, whenever conducting examinations. How to procure copies of the report will be announced later.

THE CANADIAN NATIONAL EXHIBITION

World's fairs of the past, in London, Paris, Chicago, San Francisco and elsewhere, have each marked an epoch in the history of a nation. These giant growths, on which money, genius and enthusiasm were lavished, are now but memories to the cities which housed them and to the myriads who saw them. They were the flowering of a season.

The Canadian National Exhibition, Toronto, which many of the delegates will visit on their way home from the Montreal convention, is a world's fair of another kind, a permanent growth, deeply rooted, ever expanding. It outrivals anything the world over, as an annual event, and all preconceived ideas of its character and multitudinous attractions must fall far short of the reality. To visit the Exhibition is the only way one can obtain an adequate impression of its magnitude and its many-sided appeal.

It is difficult to define concisely the functions and work of this unique institution. Its scope is as boundless almost as the category of human effort. It has common sense and the competitive spirit at its root and is something stable and enduring, a permanent institution now in its 45th year, increasing in size and influence with the prosperity and growth of Canada, annually recurring as much expected as the seasons.

Located on the curving shores of Lake Ontario, along which it extends for one mile, almost in the heart of the city, the Canadian National Exhibition forms a most picturesque background for all the shifting scenes of a nation's work and play, and withal the suggestion of home is here in its restful paths and shady retreats. It has achieved a peculiarly distinctive place in the scheme of Canadian life and is quite unlike any other annual fair or exhibition on this or any other continent standing alone, incomparable at the very apex of Exposition achievement.

No other enterprise of a permanent character yet devised anywhere has met so many wholesome tastes and interests of the general public or has been a more complete expression of the spirit of progress in its particular country.

Last year's attendance of 1,372,500 people came from all parts of the continent and from Overseas. The daily average for thirteen days was 106,000, the total being double that of any of the State Fairs, in the United States and a record unsurpassed

by any world's fair of the past in the same number of consecutive days.

Even in its recreational features the C. N. E. keeps the educational motive in view. Always there is found something to suit every wholesome taste; in fact, in the matter of special attractions the annual World's Fair has a field all its own. The plant consists of 300 acres of beautiful park land and over 80 buildings, representing an investment of $11,000,000. It is owned and controlled by the City of Toronto. Profits, if any, go to the city to help reduce the tax rate.

Nowhere does any nation so concentrate itself as at the C. N. E. It is the national show window. For a true and complete impression of Canada, her capabilities, her resources and her people, a visit to the Canadian National Exhibition is recommended. The estimated attendance for 1923 is 1,500,000 people.

MONTREAL HOTELS

MOUNT ROYAL—(Official headquarters) 1050 rooms, (European plan) $3.00 per day up.

WINDSOR—700 rooms, (European plan) $3.00 per day up.

RITZ-CARLTON—240 rooms, (European plan) $4.00 per day up.

QUEEN'S HOTEL—300 rooms, (Eur. and Amer. plan) $4.50 per day up.

ST. LAWRENCE HALL—200 rooms, (American plan) $4.00 per day up.

SCHEDULE OF SPECIAL TRAIN TO MONTREAL

Lv. Chicago	8:00 a. m. C. T.	Saturday, August	25th,	Wabash R. R.	
Ar. Windsor	4:00 p. m. E. T.	"	"	"	" "
Lv. Detroit	4:00 p. m. E. T.	"	"	"	Mich. Cent. Sta.
Ar. Windsor	4:10 p. m. E. T.	"	"	"	" " "
Lv. Windsor	4:30 p. m. E. T.	"	"	"	Can. Pac. Ry.
Ar. Kingston	4:30 a. m. E. T.	Sunday	"	26th,	" " "
Lv. Kingston (Swifts Wharf)	4:30 a. m. E. T.	"	"	"	Can. Stmsh. Lines
Ar. Montreal (Victoria Pier)	5:15 p. m. E. T.	"	"	"	" " "

FARES

Chicago to Montreal and return $44.71

Detroit to Montreal and return $29.95

SLEEPING CAR FARES

From	To	Lower	Upper	Section	Drwg. Rm.
Chicago	Kingston	$7.50	$6.00	$13.50	$27.00
Detroit	Kingston	4.50	3.60	8.10	16.50
Montreal	Detroit	6.60	5.30	11.90	23.10
Montreal	Chicago	9.90	7.95	17.85	34.65

SIDE TRIPS FROM MONTREAL

An opportunity will be given to inspect the new White Star Liner REGINA on Thursday, August 30th. The dock is about a fifteen-minute ride from the Mount Royal Hotel. The S. S. REGINA is 601 feet long, 68 feet broad and is rated at 16,500 tons. Those who wish to travel on the S. S. REGINA from Montreal to Quebec, Saturday, September 1st, can arrange passage. (Rate $10.10, including luncheon.)

A very fine trip would be to go to Quebec Saturday, on the S. S. REGINA, spend Saturday night at the Chateau Frontenac built upon Dufferin Terrace, 200 feet above the St. Lawrence. On Sunday take an automobile ride through the City of Quebec; over the famous Quebec Bridge, 3200 feet in length and 150 feet above the water; to Cape Rouge; the shrine of Saint Anne d Beaupre, always the Mecca of pelgrims; and Montmorency Falls, which are higher than Niagara Falls; leaving Quebec by new Steamer RICHELIEU, Sunday night, reaching Montreal Monday morning, September 3rd. (Rate $32.00, including all expenses, from luncheon Saturday to breakfast Monday.)

ALUMNI ASSOCIATIONS

It would be well for the secretaries of college alumni associations to make reservations early for the meetings to be held on Tuesday evening, August 28th. Communicate with the Secretary of the Local Committee, Dr. J. H. Villeneuve, 200 West Dorchester Street, Montreal, giving him the approximate number you expect to have at your meeting.

AN ERROR CORRECTED

Like the reported death of Mark Twain, the report of the death of Dr. I. I. Schmidt, of Kolding, Denmark, seems to have been very badly exaggerated. The Dr. Schmidt who died was a colleague of Dr. Schmidt of milk-fever-treatment fame, and lived in a place called Aabenraa, some 50 or 60 miles south of Kolding. A letter recently received from Dr. H. Jensen, of Kansas City, stated that he had had the extreme pleasure of meeting Dr. I. I. Schmidt, while in Denmark recently, and that the old gentleman is still hale and hearty. In which news we all rejoice.

We Want 5000 Members This Year.

DANISH VETERINARY COLLEGE CELEBRATES

Through the kindness of Dr. H. Jensen, of Kansas City, lately returned from a European tour of more than six months, we were advised that the Danish Veterinary College, of Copenhagen, would celebrate their 150th anniversary on July 13, 1923. We were directed by President Welch to send a cablegram, in the name of the American Veterinary Medical Association, communicating our felicitations upon the happy occasion. The message was sent to Dr. B. Bang, of Copenhagen.

DR. RUTHERFORD PASSES

Just as the forms for this issue were being closed word was received of the death of Dr. J. G. Rutherford, formerly Veterinary Director-General of Canada, and an ex-President of the American Veterinary Medical Association. Dr. Rutherford has been in poor health for some time, a sufferer from cardiac asthma. He went to the Pacific coast, upon the advice of his physician, early last spring, and for a time appeared to improve. He gradually became worse, however, and arrived in Ottawa about the middle of July, in a very grave condition. Death occurred on the morning of July 24.

COMING VETERINARY MEETINGS

Northwestern Ohio Veterinary Medical Association. Russell's Point, Ohio. August 1-2, 1923. Dr. C. A. Fast, Secretary, Van Wert, Ohio.

Washington State Veterinary Medical Association. (Joint meeting with British Columbia Veterinary Association.) Portland, Ore. August 2-3-4, 1923. Dr. Carl Cozier, Secretary, 320 Prospect St., Bellingham, Wash.

Wisconsin Veterinary Medical Association and Central Wisconsin Veterinary Medical Association. Stevens Point, Wis. August 8-9, 1923. Dr. O. H. Eliason, Secretary, 226 W. Gilman St., Madison, Wis.

American Veterinary Medical Association. Mount Royal Hotel, Montreal, Canada. August 27-28-29-30-31, 1923. Dr. H. Preston Hoskins, Secretary, 735 Book Bldg., Detroit, Mich.

Mahoning Valley Veterinary Club. Brookville, Pa. Sept. 13, 1923. C. M. Christy, Secretary, Brookville, Pa.

THE PATHOLOGY OF STERILITY IN CATTLE

By W. L. Boyd

University of Minnesota, St. Paul, Minn.

In presenting the subject on sterility in cattle I wish to say that the discussion this morning will be limited to those changes which occur in the reproductive organs of the female. We are not going to discuss any of the changes occurring in the male. I feel that with these slides I may be able to present to you some of the changes that commonly occur in sterility in connection with contagious abortion. There are a few other slides that will show lesions which do not occur in connection with this infection.

During the past ten years we have been studying abortion disease, and one of the projects, or sub-projects, to which we have been paying considerable attention is the pathology of sterility. Now there are many changes that undoubtedly occur in connection with this disease which we have not yet encountered, many that we have failed to recognize perhaps; and so the study of sterility or the pathology of the disease merits further study. We intend to keep up our investigations along these lines, and some of the other Experiment Stations are doing similar work.

Slide No. 1. The first slide shows the normal reproductive organs of the cow. I would like to say, just as a preliminary remark to some of the work that is to follow tomorrow, that the organs in the cow can, with a little experience and care, be readily palpated. So many of the men in the beginning of the work feel that it is almost an impossibility to palpate the various genital organs, and they frequently make the mistake of introducing the hand and arm too far beyond the rectum, into the colon, passing over these organs entirely, and then are very much surprised to find them so near and often times partially within the pelvic cavity.

Again, one will find large cows, with a great deal of length between the hook- and pin-bones, in which the reproductive organs are more difficult to palpate, especially without the use of forceps.

We find an ovary at this location and another one at this

[1]Presented at the fifty-ninth annual meeting of the American Veterinary Medical Association, St. Louis, Mo., August 28 to September 1, 1922.

point; there is a slight elevation here which indicates the presence of a corpus luteum. (Fig. 1.)

Slide No. 2. This photograph is not colored, but it shows quite well the position of the bladder. Here is the cervix and the

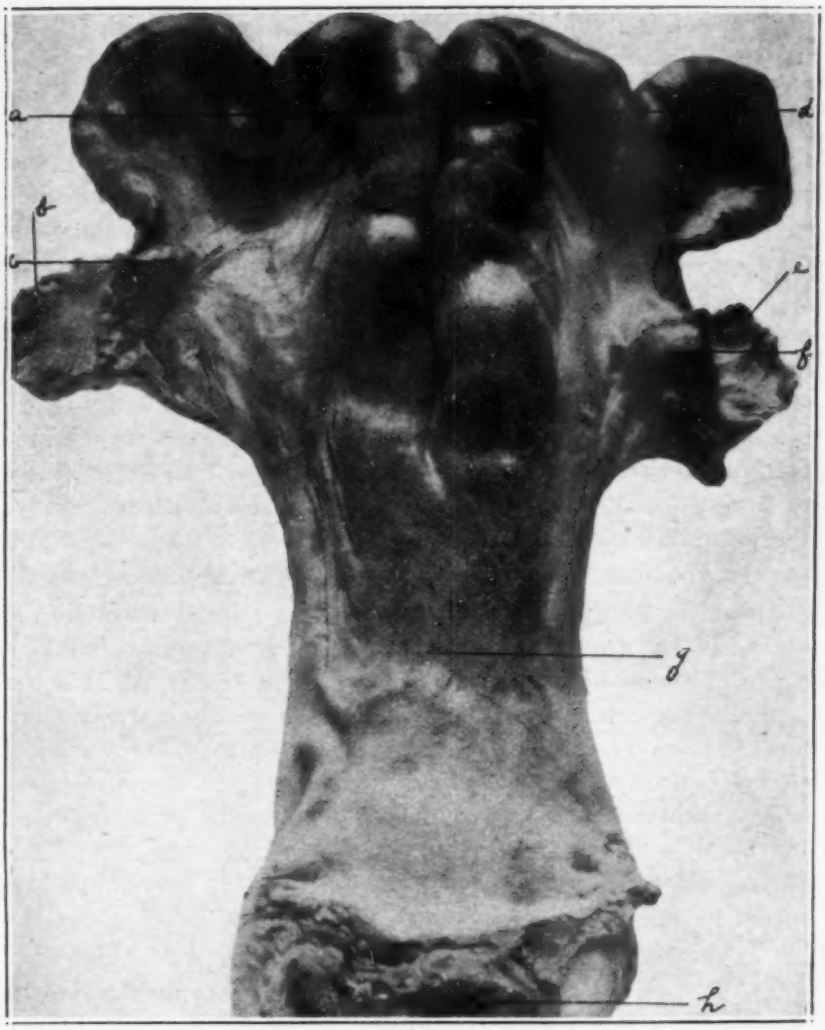


Fig. 1. Normal reproductive organs of the cow.

body of the uterus and the horns. One ovary here and another one at this point; it shows also the broad ligament.

I would like to say that ovaries differ in size considerably and yet regularly perform their normal function—that is, we may

find an ovary not any larger than an almond, with the husk off, and again one will find one as large as a green walnut, both of which are capable of normal ovulation.

Slide No. 3. This slide shows the cervical canal. A great many of the pathologic changes that one meets in the treatment of sterility occur at this point. In the vagina you will remember the epithelium is so arranged that bacteria have little opportunity to cause many pathologic changes. We find that the cervical canal is not a straight passage, and in the longitudinal folds of the mucosa the bacteria can become hidden and covered with mucus, which protects them from various medicinal agents with which you may attempt to remedy the condition.

Fig. 2. Longitudinal section of the uterine cervix. Note spiral-shaped canal and folds of the mucosa.

The cervix, on account of its anatomical structure, when once affected with inflammatory changes, provides the bacteria with such protection that they are very difficult to reach with any sort of treatment.

Slide No. 4. This represents the cervix after it has been removed and hardened in formalin. In the cow the cervix is about three to four inches in length, the lumen (cervical canal) of which is rather tortuous and difficult to dilate. The organ feels very hard, because of the great amount of muscle and fibrous tissue, so that a great many of us, in examining a cow's cervix for the first time, may make up our mind that the cervix

is too hard and say that it is hardened, that it seems to be, perhaps, in a state of chronic inflammation, but in most cases that hardness is not due to fibrosis as a result of inflammation, but is normal.

Here we find the opening of the canal, and if you will follow along closely you can see the arrangement of the mucosa. Up here you can see it extending out into the lumen, and in case of the bacteria being in these recesses, they are covered over with mucus, and, therefore, cervicitis becomes a rather difficult condition to medicate, and many times it is of long standing, bringing

Fig. 3. Severe cervicitis. Cervix and portion of vagina are prolapsed.

about hypertrophy of the lips of the external os and produces more or less desquamation of the epithelium. (Fig. 2.)

Slide No. 5. In some cases of cervicitis there is a great relaxation of the ligaments and part of the vagina prolapses, the cervix becomes protruded and in this case (Fig. 3) we see the vagina along here, and down here the outer part of the cervix or the external lips, and at this point you can see the nature of the discharge. I would like to say that in cervicitis the discharge sometimes is rather thin, mucus-like, containing particles of catarrhal discharge. Again, this discharge may be thick, and so adhesive

that one may readily confuse it with a normal, mucus plug of pregnancy. If we depend only upon the presence of a mucus plug in determining a diagnosis of pregnancy, we may readily make a mistake in our diagnosis.

Slide No. 6. This is another view which shows the cervix very clearly. It is very much engorged with blood, that is, it is hyperemic and hypertrophied. The vagina is partially prolapsed.

Slide No. 7. This ovary shows the presence of a corpus luteum. This corpus luteum is markedly projected above the surface,

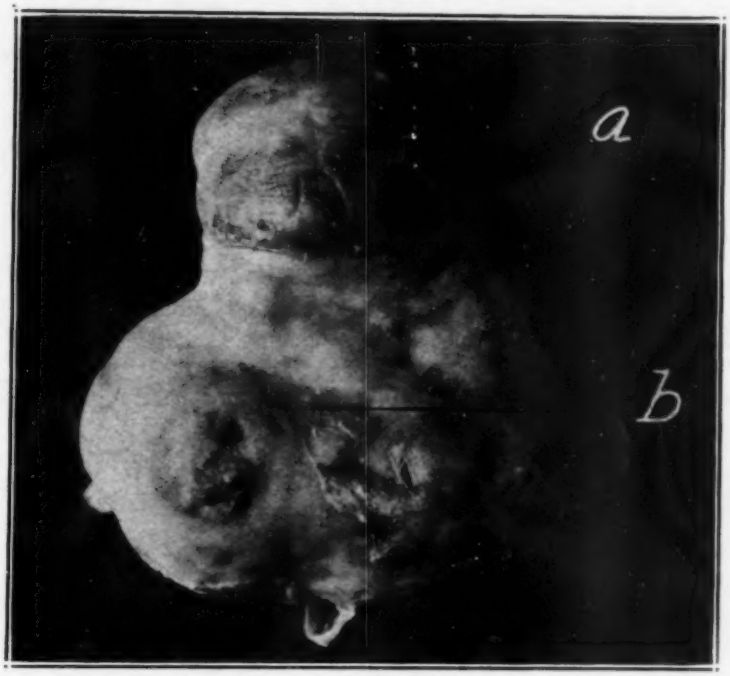


Fig. 4. Ovary showing presence of corpus luteum. Note distance the corpus luteum projects above the surface of ovary.

being only slightly imbedded; and it would be rather easily enucleated. Its lower border is about at this point.

I will say that in almost every cow, whether she be pregnant or non-pregnant, whether she be sterile, either temporarily or permanently, we invariably find a corpus luteum in some stage of development, whether it be normal or pathologic. In this case it is one of those that is situated very near the surface. (Fig. 4.)

Slide No. 8. Here we see the corpus luteum after it has been removed. In many cases the corpus luteum is about the size of a cherry; again we may find it, where it is undergoing degenerative

changes, to be much smaller. There is always an opening or a wound produced when the yellow body is enucleated. The corpus luteum is surrounded by a network of capillaries and when it is removed there is always more or less hemorrhage. The corpus luteum is a gland of internal secretion, and its function is fairly well understood.

The retention of the corpus luteum following parturition is frequently responsible for the absence of estrum, and an animal may be fresh for several months and not show estrum but when the corpus luteum is removed it allows ovulation to take place again. In a great many cases in which we have collected data,

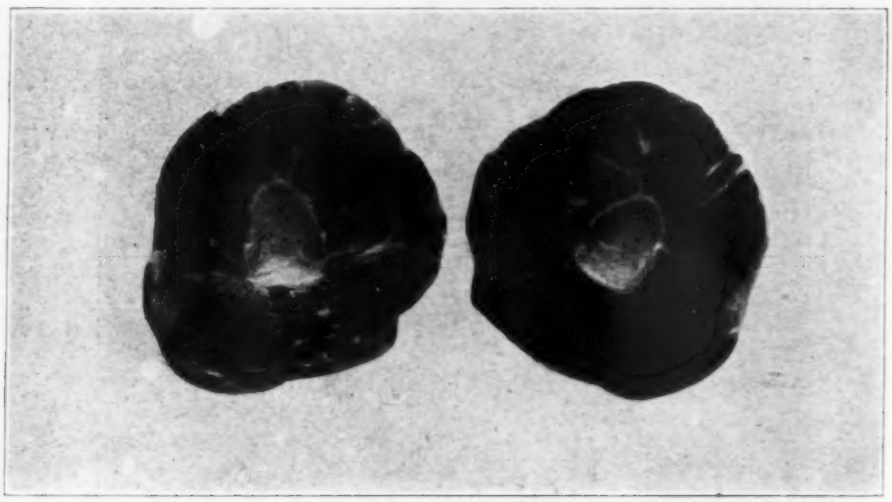


Fig. 5. Corpusl uteum, cut transversely, showing the beginning of cyst formation.

the ovary from which the corpus luteum is removed is not the one that usually functions first, but the other ovary liberates an egg, perhaps in three to five days. That means if there are no other extensive pathologic changes present, estrum will appear within a few days after removal of the corpus luteum. We have followed up quite a large number of cases, checking up to see why and in what manner the corpus luteum was inteferring with ovulation. You can figure out how it would interfere here perhaps, by mechanically obstructing the maturation of the eggs; we think also, that the corpus luteum, by means of internal secretion, inhibits ovulation in the opposite ovary.

Slide No. 9. The retained corpus luteum is subject to various degenerative changes. One is fibrous, but the most common is

cystic, so that ovarian cysts have different points of origin. One is from the graafian follicle, and another is from the corpus luteum. Many times practitioners will tell you that they have attempted to remove a corpus luteum and have found that it seemed to break, somewhat like a cyst, yet they could feel a part of the gland still imbedded. Here we see the beginning of the cyst and after a while all of these cells will have become cystic and then one could not tell it grossly, of course, from a cyst which originated in a graafian follicle. (Fig. 5.)

Slide No. 10. Here is a slide that shows a corpus luteum that is rather deeply imbedded; the wall around it is rather heavy. This photograph is not colored, but it shows the corpus luteum very well. There was another one removed at this point. At the time of the operation we did not realize that two corpora lutea were present.

Slide No. 11. Here we have a large ovarian cyst, associated with hydrosalpinx and rather marked adhesions. Cystic ovaries are rather common pathologic conditions in sterility, probably originating most frequently from the graafian follicles. Again they may originate from corpora lutea, and sometimes we find cystic ovaries that perhaps may have had no connection, in so far as we have been able to determine, to infectious abortion, but in many cases they do seem to be quite prevalent in herds where infectious abortion is or has been present.

We believe that perhaps cystic degeneration is one of the most common pathologic conditions in sterility, and I would like to say that the symptomatology is quite characteristic, that cows affected with cystic changes of the ovaries usually show irregular estrum, and sometimes they develop nymphomania, commonly spoken of as "bullers", and it is not safe to turn them loose with the rest of the herd. Because of certain changes in their conformation, particularly in the region of the rump and tail-head, the bones are so affected that they are rather easily fractured, in case of falling or being ridden by other animals.

Those are the symptoms that we find in cystic degeneration of the ovary. Occasionally you will find irregular estrum where a cow is showing disturbances of the heat period, but on examination you will be unable to find any evidence of cystic formation, but the probabilities are that cystic changes are present, but too small to detect by palpation.

Slide No. 12. In extensive hydrosalpinx, in which the lining

of the oviduct has been entirely destroyed, the walls of the tube become very thin and the lumen is filled with a clear, water-like fluid. Of course, in those cases, we have a sterile animal, especially if both tubes are involved. I believe they follow pus formation in almost all cases, with desquamation of the epithelium and a straightening out of the canal and thinning of the wall, so that hydrosalpinx often follows salpingitis, in which there has been pus formation.

Fig. 6. Reproductive organs of cow which suffered with nymphomania.

As far as the bacteriology in our work is concerned, *Bacterium abortus* (Bang) is not responsible for many of the extensive changes, other than acting as a means of paving the way for the entrance of other bacteria, such as perhaps *Bacillus pyogenes*, streptococci and other organisms of the pus-forming group. We have tried to infect normal animals by introducing, into the cervical canal and uterus, *Bacillus pyogenes* in large cultures, and

Fig. 7. Change in conformation resulting from cystic degeneration of the ovaries. Note shape of rump, particularly the tail-head.

so far we have been unable to affect the reproductive organs of a normal animal with this organism, but only occasional cases have been found where there was pus formation from which we were not able to isolate *Bacillus pyogenes*.

Slide No. 13. This animal shows the changes that I spoke about in this region, in connection with cystic ovaries. She suffered a fall, and a fracture resulted.

Slide No. 14. This shows the condition of her reproductive organs; you see here the opening of the cervix and up here the right and left horns. If we look over here, we notice that the left ovary is adherent to the uterus; the oviduct is enlarged and is in a state of hydrosalpinx; the same is true over here, this ovary is greatly enlarged and cystic. (Fig. 6.)

Invariably, in cows with these changes in the region of the tail-head, one will find cystic changes of the ovaries.

Slide No. 15. This slide shows the fracture of the vertebrae. The bones seem to be more brittle, and if you push the affected cow over suddenly in the stall you can hear a peculiar sound indicating looseness of the articulations, and if she is out in the pasture and is ridden by other animals or happens to fall, you will find that the bones in the region of the pelvis will fracture rather easily.

Slide No. 16. Here is another slide that depicts this condition rather clearly. This cow was a show animal, with excellent conformation, but after suffering with cystic degeneration of the ovaries, she hollowed out here, due to the relaxation of the ligaments, and we had a permanently sterile cow as a result of extensive cystic formation of both the oviduct and the ovary. (Fig. 7.)

Slide No. 17. Here is another case, perhaps not so extensively affected. This animal was secured early after she developed the symptoms, and in one or two treatments she returned to a normal condition again.

Cystic changes of the ovary are at times rapid in development, but regeneration is almost equally as rapid.

Slide No. 18. Here is another slide showing this condition very well. Cystic changes of the ovaries sometimes stimulates butter-fat production. In this particular case she was treated for cystic ovaries, and got with calf, and at the termination of pregnancy put on an official test, which she has just completed.

Immediately after freshening she developed cystic changes in both ovaries, but was not treated, and yet she has established a new state record for the Jersey breed. In this cow the production of milk and butter-fat was apparently stimulated by disturbances of the ovaries. (Fig. 8.)

Slide No. 19. This is a close-up view showing the condition due to the relaxation of these ligaments and the raising of the tail-head.

Slide No. 20. This is another view of the same condition. You will notice the extreme height at the tail-head. At one time this animal was level across the top-line.

Fig. 8. The results of cystic changes of the ovaries.

Slide No. 21. In the oviduct we find a great many different sorts of changes. Sometimes the condition is due to an accumulation of water or hydrosalpinx. In this case we find the tube greatly enlarged and filled with pus, and at this point the pus is caseated and the tube is completely obstructed. Up here we find a cross section of a normal tube and here you can compare it with those sections which are diseased.

In this case there was a great thickening of the walls of the oviduct, and later on I will have a slide to show you what caused it.

Slide No. 22. Here is a case that shows some changes that may occur after the removal of a corpus luteum, where there may be infection in the ovary. Diseased ovaries may at times contain bacteria. Our bacteriologic examinations of cystic ovaries, at time of slaughter, as a rule show them to be sterile, but sometimes they do contain bacteria. So, if a corpus luteum is removed, or a cyst broken down, in which there are bacteria present, a rather extensive inflammation occurs and the pathologic conditions become more extensive and severe than they were before the cyst was ruptured or the corpus luteum removed.

Slide No. 23. This slide represents a fairly common pathologic condition in sterility. It was photographed in such a position that it doesn't show well here, but it is known as pyometra. Pyometra is a rather common condition in sterility and almost all of the cases that we have examined have shown the presence of *Bacillus pyogenes.*

In pyometra the mucosa becomes almost entirely destroyed; the epithelial cells will become desquamated and other types of epithelium will replace them; but if treatment is given early, the uterus may come back to its normal size and the animal may again reproduce. If they are treated late in life, sometimes they keep on refilling with pus and never become normal; again the uterus will apparently become normal in size and in position, the cow show her normal estral periods and be bred numbers of times and yet never conceive. Because of the destruction of the epithelium, apparently there is no place for the fertilized egg to become imbedded. So, in cases of pyometra of long standing, there is a great deal of destruction which never seems to be properly repaired, or the epithelium that takes the place of the normal tissue is such that it does not permit the fertilized egg to become successfully imbedded.

Slide No. 24. Here is a uterus showing the collection of a large amount of pus. In these cases of pyometra the history is sometimes confusing. A man making a rectal examination may think that the animal in question is pregnant, but if he will examine the cervix he will find it is usually partially open, and when the cow is in a recumbent position, there is more or less escape of a white or yellowish-white pus; sometimes it is malodorous and sometimes

not. There is an absence of estrum usually, but when the uterus is examined, we find that the walls do not have the same amount of muscle tone. And usually in one or the other of the ovaries there will be a corpus luteum present, which is frequently deeply situated. (Fig. 9.)

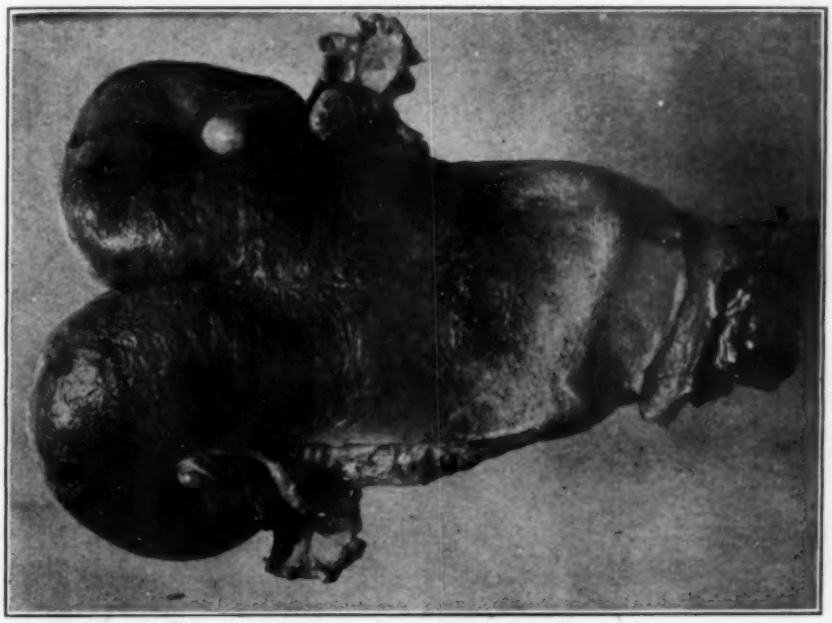


Fig. 9. Pyometra somewhat resembling the gravid organ.

Slide No. 25. This slide shows pretty well the longitudinal muscular folds of the horns of the uterus. They are not always so well marked as this.

Here we find the oviduct filled with an amber-colored fluid. In this ovary there is a corpus luteum present.

Slide No. 26. This slide is similar. We will pass right on to the next one.

Slide No. 27. There are pathologic conditions undoubtedly occurring in animals which we are unable to detect upon manual examination. Here is a case, apparently normal, that never would breed; and securing these organs after slaughter and studying them histo-pathologically, we found that the mucous lining was rather swollen and contained a galatinous or watery-like fluid found in mucoid degeneration. In this case it was so

extensive that conception was impossible, but we did not recognize that until we conducted the autopsy.

Slide No. 28. This slide is somewhat dark, but we can see the outline of the ovaries on both sides; both contained an organized clot of blood. Ovarian hematomata are not very common.

Slide No. 29. Sometimes the uterus undergoes a condition of cystic formation known as hydrometra. These cysts occur in the uterine glands, probably due to bacterial invasion. On manual examination sometimes we fail to find these cysts, unless some of them are quite large, but we can see the lining

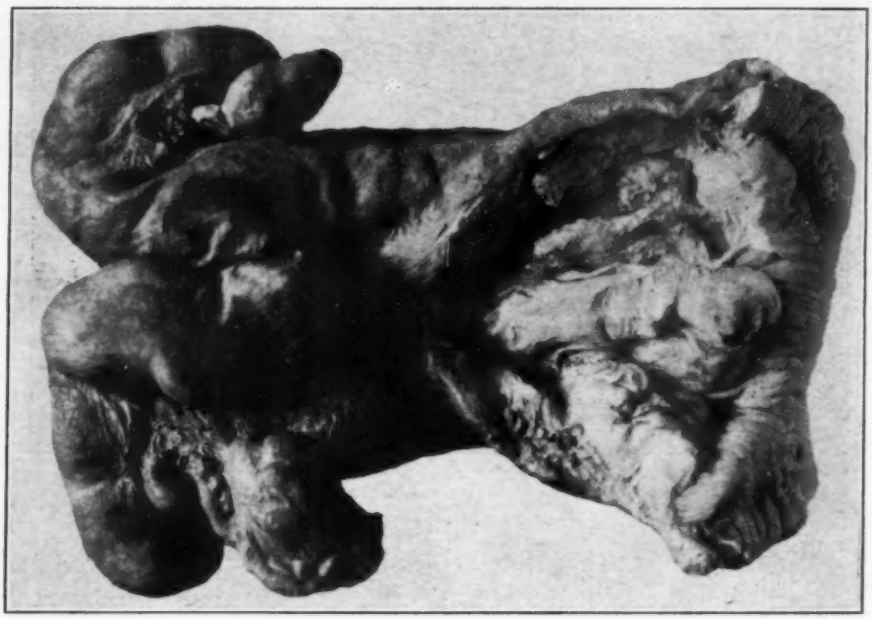


Fig. 10. Endometritis, cystic ovary and oviduct. Extensive adhesions between ovary and oviduct.

here and we can see these little openings all through it—multiple cystic formation—and these cysts are all present in the uterine glands.

Slide No. 30. Here we find the vagina and the cervix laid open, and the left horn and the right horn. Here we see a rather common pathologic condition. If the ovary has been badly diseased, very frequently the oviduct is affected with hydrosalpinx and is adherent to the ovary. Adhesions are very common pathologic conditions in sterility. (Fig. 10.)

Slide No. 31. Another condition that we frequently meet

with—perhaps not always connected with abortion disease—is where there is mummification of the fetus. Mummification of the fetus means some destruction of the uterine mucosa; it means also a retained corpus luteum, and this corpus luteum sometimes becomes rather deeply imbedded, making it rather difficult of removal, but many of these cows that have been treated for this

Fig. 11. Maldeveloped genital organs.

sort of condition—mummification of the fetus—have been restored to normal breeding condition, because the destruction of the epithelium was not extensive.

Slide No. 32. Here is a section of the uterus showing the mucous surface which presents a nodular formation. At first, upon examination, it was thought to be tuberculous, but a microscopic study showed it to be vegetative endometritis. Macroscopically it resembles tuberculosis.

Slide No. 33. Here is a slide that is rather interesting. In many cases of severe infections following retention of the fetal membranes, there will be abscess formation with adhesions. Here is a large abscess, and another one at this point and another abscess up here. Abscess formation is not uncommon in cases of metroperitonitis, with rather marked and extensive adhesions. Many of these cases are rendered permanently sterile.

Slide No. 34. In connection with the pathologic changes not brought about by bacteria, we find that quite a number of heifers which have not suffered with abortion disease are sterile for some reason or other; many of these are sterile because of malformation of the organs. In many of these cases of malformation we have found that the owner had been practicing rather

Fig. 12. Rudimentary uterus and ovaries from heifer 2½ years of age. Note shape and longitudinal furrows of the ovaries.

close breeding, and that there was one or more parts of the reproductive organs missing.

Here we have a slide that shows what is supposed to be a horn of the uterus; the ovary here, over here the other ovary and here another horn of the uterus. In this little strip of tissue was a milky-like fluid representing some form of degeneration. No

bacteria were present. Similar conditions are found quite frequently in the study of the pathology of sterility.

Slide No. 35. Another condition with which you are all familiar, undoubtedly, is that found in the free-martin or the heifer calf that is twinned with a male animal.

Slide No. 36. Another malformation. Here we find the vagina laid back and the opening of the cervix and the body of the uterus. There was a connection here, all the way through, but there was no connection here, just a strip of connective tissue and no canal. We found a milky fluid, which was sterile, no

Fig. 13. Hydrometra. Note dilated glands.

bacteria being present. This sort of a condition in our experience invariably has been found in those herds where they have been practicing close breeding. Thus it is well to consider, in the study of sterility, malformation of the organs. (Fig. 11.)

Slide No. 37. This slide shows a rudimentary uterus, which is fairly common, and rudimentary ovaries in which there was plenty of connective tissue but no ovisacs near the surface. Small graafian follicles appear in the central portion. (Fig. 12.)

Slide No. 38. This is a microscopic section. Here we find the lymphoid bodies; and here we find a large gland which has

become cystic. These glands probably become cystic through infection, and here we find normal glands. In the lumen of the gland will be found leukocytes, broken-down cells and a gelatinous-like fluid. (Fig 13.)

Slide No. 39. This slide shows more or less fibrous formation, and here we find the cellular elements.

Slide No. 40. Another slide showing cystic formation of the uterus.

Fig. 14. Uterus affected with leukemia.

Slide No. 41. This slide does not show very much at all, because in mucoid degeneration the tissue is rather difficult to stain.

Slide No. 42. This slide represents a section through an oviduct. We thought the thickening was due to fibrosis, but on microscopic study we found that the epithelium had become removed or desquamated and that a round-cell infiltration was responsible for the thickened walls.

Slide No. 43. Here in this slide we find the cervix, the body of the uterus, and here is one of the horns. Over here is the other horn of the uterus, and the broad ligament at this point.

Here is a rather large ovary, weighing something like thirty-six to forty pounds—a tumor.

Slide No. 44. This shows a large fibroma removed from the vagina of a cow.

Slide No. 45. In this last slide we have a very rare, at least I think very rare, pathologic condition in sterility. We frequently find and hear of leukemia in the cow, but in so far as I know there has been no case of leukemia described, in which the reproductive organs were involved, although I haven't looked up the literature very carefully. (Fig. 14.)

In this case the uterus was affected and you can see how thick the walls are.

Here also it gives us an idea of the thickness of the walls and the length of the horns, absolutely no signs of an inflammatory condition, but there was extensive thickening, due to the infiltration of lymphoid cells.

IMPORTANT CHANGES IN BUREAU OFFICIALS

Dr. H. M. Graefe (K. C. V. C. '09), who has been in charge of Bureau field activities in Kansas, has been transferred to a field assignment in Nebraska.

Dr. N. L. Townsend (U. P. '99), for a number of years in charge of Federal Meat Inspection project at New York City, has been transferred to Topeka, Kansas, where he will have charge of scabies and tuberculosis eradication, as well as hog cholera control.

Dr. E. C. Joss (Chi. '02), inspector-in-charge of Federal Meat Inspection at Portland, Oregon, has succeeded Dr. N. L. Townsend as inspector-in-charge at New York City.

Dr. M. O. Anderson (Ont. '86), for several years in charge of Federal Meat Inspection at South St. Paul, Minnesota, has been transferred to a similar assignment at Portland, Oregon.

Dr. R. M. Mullings (N. Y. C. V. S. '89), inspector-in-charge of Federal Meat Inspection at Jersey City, has been transferred to South St. Paul, Minnesota, to take charge of the same line of Bureau work at the latter point.

Dr. T. J. Kean (U. P. '90), traveling veterinarian in the Meat Inspection service of the Bureau of Animal Industry, has been assigned to take charge of the Meat Inspection project at Jersey City.

SOME EXPERIMENTAL WORK IN HOG CHOLERA[1]

By E. W. PORTER,

Assistant Pathologist, State Serum Institute, Department of Agriculture, Reynoldsburg, Ohio

It is not the object of this paper to advance any new features of hog cholera or its control, but rather to present the results of some work conducted to determine proper technic under certain conditions met with in field practice. Variations quite frequently occur which compel the operator to decide between two or more methods of procedure and to assist in making proper decision, in a few instances, is the object of the following experiments.

The results of any experimental work, with a disease such as hog cholera, must be interpreted broadly, due to the great number of conditions which would influence similar work conducted in field practice. The results obtained, as set forth in the following experiments, should be regarded as applying to instances where ideal conditions prevail, but would possibly vary somewhat under less favorable conditions. The following is submitted to you in the hope that it may be of some assistance in solving your field problems.

EXPERIMENT NO. 1

Object of Experiment:—To determine the effect, if any, upon the potency of anti-hog cholera serum when subjected to freezing.

Explanation:—Frequently, through conditions which perhaps are mostly avoidable, but nevertheless quite common, serum is frozen to different degrees for varying lengths of time. Whether or not this condition would have any effect upon the potency of the material would perhaps be a question in the minds of some and as a field test is not practical, the following experiment was conducted.

Description:—In this experiment serum of known potency was used, which in the original test had protected 50-lb. pigs in doses of 10 cc against 2 cc of virus. Samples of this serum were kept frozen for periods of three, seven and fourteen days, respectively. They were then thawed at room temperature and tested in doses of 10 cc and 20 cc on pigs averaging 49 lbs. in

[1]Read before the semi-annual meeting of the Michigan State Veterinary Medical Association, East Lansing, Michigan, June 27, 1923.

weight. All serum pigs remained healthy, with the control pig dying on the twelfth day, showing symptoms and post-mortem lesions of acute cholera.

Summary:—Freezing seemed to have no influence upon the potency of anti-hog cholera serum.

Experiment No. 2

Object of Experiment:—To determine the part played by birds in the transmission of cholera from one farm to another and the time required for physical evidence of cholera to appear following transmission of infection in this way.

Explanation:—It has long been recognized that birds, especially buzzards, pigeons, sparrows, etc., play an important part in the dissemination of cholera over large areas. While the possibility of this condition has not been denied, it was regarded as an important point in control to know something of the rapidity with which the disease could be spread in this manner and the time required for evidence of disease to appear in territory adjacent to an outbreak of cholera, if this was the only unguarded method of dissemination.

Description:—In this experiment ten susceptible pigs were used. These pigs were of the same litter, about ten weeks old and averaged 45 lbs. in weight. They were divided into three lots, each lot being placed in one of three adjacent pens. The pens were of solid concrete formation, with walls thirty-six inches high and had no connections. Pen No. 1, with three pigs, was used as the control pen, the pigs receiving no treatment. Pen No. 2 was used as the infection pen, with three pigs receiving an injection of virus and one control pig serum and virus. Pen No. 3, with three pigs which received no treatment, was used as the exposure pen. Pens Nos. 2 and 3 were enclosed together, with fine-mesh, wire screening which would exclude mice and sparrows. Attendants entered only the infection pen and for the purpose of taking temperatures. Observations were taken daily, temperatures of the pigs in the infection pen being recorded and the other pigs observed for physical evidence of disease. Transmission was accomplished by six White Leghorn hens that had access to pens Nos. 2 and 3.

All feeding and watering was done from the outside of the pens, the feed consisting of a thin slop, fed in shallow troughs, and shelled corn fed on the floor. Manure was not removed during the test. Control pen was fed in the usual manner. The

infection pen was fed and the chickens would mingle with the pigs to get a share of the feed. Fifteen minutes later, the exposure pen was fed and the chickens would fly over the partition and feed among the exposed pigs.

All pigs in the control pen, and the serum pig in the infection pen, remained healthy during the test. The virus pigs in the infection pen showed an elevation of temperature on the fourth day, with loss of appetite and other physical evidence of infection from the eighth to the ninth day. Two died on the eleventh and one on the seventeenth day after inoculation. All of the pigs in the exposure pen developed loss of appetite on the seventeenth day of the test, or the ninth day after the appearance of physical sickness, and thirteen days after the appearance of temperature reaction in the pigs in the infection pen. Two pigs died on the second day and one on the third day, after showing physical evidence of disease. Post-mortem lesions were those of hog cholera.

Summary:—Chickens proved to be an important factor in the transmission of hog cholera, when confined to close quarters. Physical evidence of cholera appeared in the exposed pigs nine days after it appeared in the infected pigs.

It should be understood that these results were obtained under intensified conditions and a somewhat longer period of time could be expected under natural conditions. (See Table No. I)

TABLE I
CHICKENS AS CARRIERS OF THE VIRUS OF HOG CHOLERA

Pen	Pig No.	Treatment	Result
No. 1 (Control)	91	None	Remained well. Released 20th day. Susceptibility to cholera subsequently proven by inoculation with virus.
	92		
	93		
No. 2 (Infection)	94	Serum-virus	Remained well. Released 20th day.
	95	Virus	Sickened 8th day. Died 11th day.
	96		Sickened 8th day. Died 17th day.
	97		Sickened 9th day. Died 11th day.
No. 3 (Exposure)	98	Exposed	Sickened 17th day. Died 19th day.
	99		Sickened 17th day. Died 20th day.
	100		Sickened 17th day. Died 19th day.

Experiment No. 3

Object of Experiment:—To determine the comparative virulence of whole and clarified cholera blood, at different periods after carbolization.

Explanation:—Following the advent of clear anti-hog cholera serum the question of a clear hog cholera virus in the form of centrifuged hog blood was considered. The opinion was held by some workers that a clear, phenolized virus, of this nature, would not retain its virulence as long as carbolized, whole-blood virus, due to the greater bactericidal action of phenol in the blood virus from which the corpuscles had been removed. To determine definitely the relative virulence of the two products the following experiment was conducted.

Description:—Twenty-two susceptible pigs, averaging about 50 lbs. in weight, of practically the same age and raised together on the same farm, were divided into four lots, three lots of six each and one lot of four. Each lot was subdivided, half of the pigs being placed in each of two pens. Each lot received an injection of 2 cc of virus of the same collection and date of carbolization, one pen receiving whole, carbolized, virulent blood and the other centrifuged, carbolized, virulent blood. One pig in each pen received serum in addition. Virus which had been carbolized for different lengths of time was used, lot No. 1 receiving blood carbolized nine days; lot No. 2, twenty-nine days; lot No. 3, forty-nine days; and lot No. 4, sixty-eight days. Observations were made daily, temperatures and physical reactions being recorded.

All pigs receiving serum in addition to the virus remained healthy throughout the experiment. All pigs which received virus alone showed an elevation of temperature on the fourth day and loss of appetite on the fifth or sixth day. They were killed for diagnosis on the sixth day. Post-mortem findings were those of acute cholera and very uniform throughout.

Summary:—In this test there was no apparent difference in the virulence of the whole-blood virus and the clarified-blood virus, up to and including a period of sixty-eight days carbolization. Neither was there any difference in whole or clarified virus for the different periods of carbolization. (See Table No. II.)

Supplementary Experiment

Explanation:—The sixty-eight-day period of carbolization exceeds the age limit on virus dispensed under government super-

TABLE II

COMPARATIVE VIRULENCE OF WHOLE-BLOOD AND CLARIFIED HOG CHOLERA VIRUS AT DIFFERENT PERIODS AFTER CARBOLIZATION

Pig No.	Virus	Treatment	Result
878	Whole-Blood	Serum-Virus	Remained well
880	(9 days)	Virus	Killed 6th day
881		Virus	Killed 6th day
879	Clarified	Serum-Virus	Remained well
882	(9 days)	Virus	Killed 6th day
883		Virus	Killed 6th day
872	Whole-Blood	Serum-Virus	Remained well
874	(29 days)	Virus	Killed 6th day
875		Virus	Killed 6th day
873	Clarified	Serum-Virus	Remained well
876	(29 days)	Virus	Killed 6th day
877		Virus	Killed 6th day
866	Whole-Blood	Serum-Virus	Remained well
868	(49 days)	Virus	Killed 6th day
869		Virus	Killed 6th day
867	Clarified	Serum-Virus	Remained well
870	(49 days)	Virus	Killed 6th day
871		Virus	Killed 6th day
862	Whole-Blood	Serum-Virus	Remained well
864	(68 days)	Virus	Killed 6th day
863	Clarified	Serum-Virus	Remained well
865	(68 days)	Virus	Killed 6th day
940	Whole-Blood	Serum-Virus	Remained well
941	(103 days)	Virus	Died 15th day
942		Virus	Died 17th day
943	Clarified	Serum-Virus	Remained well
944	(103 days)	Virus	Died 15th day
945		Virus	Died 11th day
946	Whole-Blood	Serum-Virus	Remained well
947	(139 days)	Virus	Died 15th day
948		Virus	Died 16th day
949	Clarified	Serum-Virus	Remained well
950	(139 days)	Virus	Remained well*
951		Virus	Remained well*

*Susceptibility of these two pigs proven by subsequent inoculation.

vision, but to get a further check on the resistance of the virus of hog cholera to the action of phenol, the following supplementary test was conducted.

Description:—Twelve pigs averaging 35 lbs. in weight were divided into two lots of six each. Each lot was subdivided, half of the pigs being placed in each of two pens. One lot was injected

with virus carbolized one hundred and three days, and the other with virus carbolized one hundred and thirty-nine days, the pigs in one pen receiving whole-blood virus and those in the other clarified virus of the same collection and date of carbolization. One pig in each pen received serum in addition. Observations were made daily, temperatures and physical reactions being recorded.

The serum pigs remained healthy throughout the test. The virus pigs injected with whole-blood virus, carbolized one hundred and three days, showed an elevation of temperature on the fourth day and loss of appetite on the fifth day. The disease was allowed to run its course, one pig dying on the fifteenth and one on the seventeenth day. The virus pigs injected with clarified virus, carbolized one hundred and three days, showed an elevation of temperature on the fourth day and loss of appetite on the seventh day. One died on the eleventh and one on the fifteenth day.

The virus pigs injected with whole-blood virus, carbolized one hundred and thirty-nine days, showed an elevation of temperature on the fourth day and loss of appetite on the fifth day. One died on the fifteenth and one on the sixteenth day. The virus pigs injected with clarified virus, carbolized one hundred and thirty-nine days, remained healthy. Their susceptibility to cholera was proven by subsequent inoculation.

Summary:—Carbolization for one hundred and three days seems to have no effect on the virulence of either whole-blood virus or clarified virus. Carbolization for one hundred and thirty-nine days did not destroy the virulence of whole-blood virus, but clarified virus, carbolized one hundred and thirty-nine days, did not infect susceptible pigs. (See Table No. II).

The principal argument advanced against the efficiency of clarified virus is that the period of immunity which follows its use, in the serum-virus method of immunization, is of shorter duration than that produced by the use of whole-blood virus. Perhaps the most rigid test of immunity that could be made would be the hyperimmunization of supposedly immune hogs by an intravenous injection of a large amount of virulent cholera blood. Using this method, the immunity of two hundred and twelve hogs, which had been immunized for different lengths of time, with clarified virus, was tested. These hogs had been immunized as pigs, having received a dosage of from 30 cc to 40 cc of serum and 2 cc of clarified virus. The dosage used in

immunization, the duration of time between immunization and hyperimmunization, with the results, are shown in Table No. III.

TABLE III

RESULTS OF HYPERIMMUNIZATION OF TWO HUNDRED AND TWELVE (212) HEAD OF HOGS IMMUNIZED WITH CLEAR VIRUS

No. Hogs	Immunizing dose		Time of Immunity	Results of Hyperimmunization
	Virus	Serum		
39	2 cc	50 cc	5 mos. 7 days	Immunity perfect
36	2 cc	30 cc	5 mos. 24 days	Immunity perfect
17	2 cc	40 cc	6 mos. 2 days	Immunity perfect
16	2 cc	30 cc	6 mos. 9 days	Immunity perfect
19	2 cc	40 cc	6 mos. 22 days	Immunity perfect
26	2 cc	40 cc	7 mos. 13 days	Immunity perfect
30	2 cc	30 cc	8 mos. 14 days	Immunity perfect
35	2 cc	30 cc	8 mos. 24 days	Immunity perfect

These hogs were hyperimmunized by the intravenous injection of virulent cholera blood at the rate of 5 cc per pound body weight, which averaged about 1000 cc per hog. The most marked example of the duration of immunity would be found in the last two groups of hogs, which were from one herd and were treated when small pigs weighing 40 lbs. or less. These hogs were hyperimmunized, eight and one-half months later, and none of them developed even a temperature reaction.

EXPERIMENT NO. 4

Object of Experiment:—To determine the possibility of producing active immunity, by the administration of virus at different intervals after serum-alone treatment, and incidentally to determine the duration of passive immunity, when tested by the direct injection of virus.

Explanation:—Frequently an immunity is desired under conditions which would make the administration of virus a dangerous procedure. For example, sows which are to farrow in a short time, show hogs to be shipped to fairs and stock hogs shipped for feeding purposes. Especially in the latter instance, shipping would furnish some chance for infection with cholera, making immunity desirable and at the same time the resulting exposure, together with a change of feed and other conditions, could so

lower the animals' resistance that the immediate use of virus would be inadvisable. The most universally recognized method of procedure in these instances has been the use of what is known as the "follow-up" treatment. This consists of the use of serum-alone, for immediate protection, followed in three or four weeks by serum and virus under more favorable conditions. This procedure doubles the cost of immunity and it was realized that if instead of the second treatment consisting of serum and virus, an administration of virus alone could be given with relative safety, and yet establish the same degree of active immunity, the cost could be reduced practically one-half. For the purpose of establishing the degree of safety, as well as the efficiency of this method, the following experiment was conducted.

Description:—Twenty-four shotes averaging about 50 lbs. in weight were obtained from a farm where an accurate history of conditions was available. These shotes were each given an intraabdominal injection of 40 cc of clear serum. On each succeeding seventh day, thereafter, one lot of four pigs was given an injection of 2 cc of hog cholera virus, making six lots, injected a week apart. With one exception all pigs remained healthy up to and including the fifth week. All pigs receiving virus the sixth week showed an elevation of temperature on the fourth day and loss of appetite on the sixth day. They were killed for diagnosis on the eighth day and showed distinct lesions of cholera.

With the exception of one pig (No. 664) in the third week, which developed cholera after ten days and was killed as a chronic case ten weeks later, the immunity seemed to be absolute for the first five weeks, although there was a slight temperature reaction in all pigs in the fifth week. The pigs injected the sixth week, however, seemed to have no resistance to infection. This would indicate, in this instance, that the passive immunity expired between the fifth and sixth week.

To test the duration of the active immunity produced, one pig in each of the first five weeks was subjected to infection by inoculation, the fourth, fifth, sixth and seventh month after receiving virus. The immunity remained absolute in all hogs.

Summary:—When tested by direct inoculation, passive immunity protected pigs for five weeks in one instance. The active immunity produced did not vary up to and including the

seventh month, regardless of when the virus was given after serum-alone. (See Table No. IV.)

TABLE IV

TESTS OF IMMUNITY PRODUCED BY SERUM-ONLY TREATMENT, FOLLOWED BY VIRUS AT DIFFERENT INTERVALS

Pig No.	Treatment	Temperatures								Result	Tested
		1	2	3	4	5	6	7	8		
655	Serum, Dec. 28; Virus, Jan. 4	2.6	2.4	3.0	2.6	2.0	2.4	2.8	2.4	R.W.	May 4
656		2.4	2.8	2.0	3.2	3.0	3.2	3.6	3.2	R.W.	June 7
657		2.2	3.2	3.0	2.0	2.0	2.4	2.4	2.6	R.W.	July 12
658		3.0	3.0	2.2	3.0	2.6	2.6	3.0	2.8	R.W.	Aug. 15
659	Serum, Dec. 28; Virus Jan. 11	2.2	2.2	1.8	2.0	2.6	2.4	1.8	2.0	R.W.	May 4
660		2.4	2.0	2.0	2.2	2.0	1.6	2.0	1.8	R.W.	June 7
661		2.6	2.8	2.4	2.4	2.0	2.0	2.0	2.4	R.W.	July 12
662		3.4	2.8	2.8	2.6	2.6	2.8	2.4	2.2	R.W.	Aug. 15
663	Serum, Dec. 28; Virus, Jan. 18	3.2	3.0	2.6	3.0	2.2	2.6	2.0	3.2	R.W.	May 4
664		3.0	3.2	3.2	3.0	2.6	2.8	2.6	2.6	R.W.	June 7
665		2.6	2.8	2.4	2.8	2.2	1.8	2.4	2.8	R.W.	July 12
666		2.4	2.0	1.6	2.2	2.4	2.0	2.6	2.2	R.W.	Aug. 15
667	Serum, Dec. 28; Virus, Jan. 25	2.0	2.2	1.8	1.8	2.0	2.6	1.8	2.4	R.W.	May 4
668		1.8	1.6	1.4	1.8	2.6	2.4	1.6	2.2	D.I.	
669		2.0	1.0	1.6	2.0	2.0	2.2	2.4	2.0	R.W.	July 12
670		1.6	1.2	2.6	2.0	1.6	2.4	2.2	2.8	R.W.	Aug. 15
671	Serum, Dec. 28; Virus, Feb. 2	2.4	2.4	1.2	1.8	3.6	3.0	2.8	2.4	R.W.	*
672		2.0	2.2	2.6	4.2	4.2	3.4	3.0	2.6	R.W.	May 4
673		2.6	2.6	3.0	2.6	2.4	2.2	2.6	3.2	R.W.	June 7
674		2.0	2.4	3.0	3.0	4.2	3.2	3.6	3.0	R.W.	July 12
675	Serum, Dec. 28; Virus, Feb. 9	2.4	2.2	2.6	3.6	4.4	5.0	4.6	5.6	K.D.	
676		3.2	2.8	3.6	3.2	6.0	5.4	6.2	5.0	K.D.	
677		3.6	4.2	3.4	5.6	5.6	4.8	4.2	5.4	K.D.	
678		3.6	3.6	4.2	4.6	4.8	4.6	4.4	4.8	K.D.	

R.W. = Remained Well. D.I. = Died from Injury. K.D. = Killed for diagnosis.

*Died, March 8, pneumonia.

Experiment No. 5

Object of Experiment:—To determine the value of anti-hog cholera serum when used as a curative agent.

Explanation:—A large part of the work of immunization of hogs against cholera is conducted in infected herds and different stages of the disease are usually encountered. In treating under these circumstances it is well to know what results can usually be expected from the administration of serum.

The results obtained from the use of serum in cholera that has been produced artificially will probably vary somewhat from the results obtained from its use following natural infection. In inoculation cholera the duration of the disease is known and the development in different animals would be quite uniform, whereas in cholera, the result of natural infection, the exact duration of the disease is unknown and different stages would be found in different animals. However, the results obtained experimentally should be of some value in controlling natural infection if an accurate diagnosis has been made.

Description:—The following experiment was conducted with sixteen susceptible pigs averaging about 40 lbs. in weight. They were divided into three lots, one lot of six and two lots of five each. All pigs were infected by direct injection of virus on the same day.

In lot No. 1, three pigs were used as virus controls and three given protective doses of serum simultaneously with the virus.

In lot No. 2, two pigs were used as virus controls and three given curative doses of serum at the first rise in temperature.

In lot No. 3, two pigs were used as virus controls and three given curative doses of serum at the first physical evidence of infection.

In lot No. 1, the control pigs became sick on the fourth day and died, two on the eleventh and one on the twelfth day. The serum pigs showed temperature reactions but remained healthy.

In lot No. 2, the control pigs became sick on the sixth day and died, one on the thirteenth and one on the fourteenth day. The serum pigs, treated on the fourth day after receiving virus, developed typical cholera temperatures, with slight loss of appetite for one day, but made complete recoveries.

In lot No. 3, the control pigs became sick on the fourth day, one dying on the fourteenth and the other on the sixteenth day. The serum pigs treated on the sixth day, and showing physical evidence of infection, did not respond to treatment and died on

the fifteenth and sixteenth days.

Summary:—It would seem from the foregoing that anti-hog cholera serum has curative properties when used in the initial stages of infection, but is of no value if administered after physical evidence of infection has appeared. (See Table No. V)

TABLE V
VALUE OF SERUM WHEN USED AS A CURATIVE AGENT

Pig No.	Virus	Serum	Condition	Result
145	8–11	——		Died 8–22
146	8–11	——		Died 8–23
147	8–11	——		Died 8–22
151	8–11	8–11	Serum administered	Remained well
152	8–11	8–11	simultaneously with	Remained well
153	8–11	8–11	virus	Remained well
154	8–11	——		Died 8–23
155	8–11	——		Died 8–24
159	8–11	8–15	Serum administered	Recovered
160	8–11	8–15	at first rise in temper-	Recovered
161	8–11	8–15	ature (4th day)	Recovered
162	8–11	——		Died 8–24
163	8–11	——		Died 8–26
167	8–11	8–17	Serum administered at	Died 8-25
168	8–11	8–17	first appearance of clin-	Died 8–26
169	8–11	8–17	ical symptoms (6th day)	Died 8–25

It is true that many hogs, physically sick from cholera, recover following the use of the serum treatment. It is also true that some hogs recover from an attack of cholera with no treatment. Again, in many outbreaks of cholera of a virulent type, the use of serum alone on visibly sick hogs has very little effect on the course of the disease.

It can be readily understood, therefore, that the results of serum treatment, in visibly sick hogs, will depend upon a number of factors, such as the resistance of the animals, the virulence of the infection and the potency and amount of serum injected. From a financial standpoint, the advisability of the use of serum in infected herds must always be contingent upon these factors.

It is desired that the foregoing work be regarded as limited in scope and while some of the results have been substantiated by additional tests, the work has not been broad enough to form absolutely definite conclusions. However, it is felt that the results obtained are sufficiently suggestive to justify consideration of their use in actual practice.

GLANDERS AND BOVINE INFECTIOUS ABORTION COMPLEMENT FIXING ANTIBODIES IN TWO APPARENTLY NORMAL HORSES[1]

By FRED BOERNER, JR., *Philadelphia, Pa.*

During the month of February, 1922, the complement-fixation test for glanders was conducted at this laboratory on about 2,000 horses belonging to the City of Philadelphia. With the exception of two they all gave negative reactions to this test. The intradermal mallein test was applied at the same time without a single reaction. The two horses reacting to the serum test, but failing to react to the mallein test, were made a subject of study. One was known as No. 33 and the other as No. 60. They were from two different stables, and had been owned by the city for over three years. There was no history of glanders having ever occurred in these stables, or in the stables in which they had been prior to purchase by the city.

The intradermal mallein test was then applied to the opposite eye with negative results. The ophthalmic test also failed to give a reaction. The mallein used had been proved potent by tests on known glanderous animals and was subsequently proved potent by the same method.

Our interest was then centered on the reactions given by the serum test. The reactions to the original test were +4 with 0.2 and 0.1 cc of serum in both cases. Repeated tests with several antigens of *B. mallei* gave the same result.

The question of specificity was then studied and the first step was to test their sera with an antigen prepared from cultures of *Bact. abortus* (Bang.) The result was that positive reactions were obtained as follows: No. 33, +4 in doses of 0.2 and 0.1 cc of serum and No. 60, +4 in the dose of 0.2 cc and +1 in dose of 0.1 cc of serum. The test was repeated with several antigens and the same results obtained.

From the history of these animals they were not exposed for a number of years, probably not during their whole life, to an infection with *Bact. abortus* (Bang).

In all these tests, control tubes of the serum, without the presence of antigen, hemolyzed readily; nevertheless anticomplimentary tests were made and both sera failed to inhibit or even retard hemolysis in the 0.5 cc dose.

[1]Contribution from the Bureau of Animal Industry of the Pennsylvania Department of Agriculture. New Series No. 11.

The specificity of the reactions was further proved by absorption tests, which were applied as follows:

The sera were diluted with sufficient saline to make a 20 percent solution; each cubic centimeter then represented 0.2 cc of serum. To one portion a heavy emulsion of washed glanders bacilli was added. To another portion washed abortion (Bang) organisms were added and a third portion was not treated at all.

All samples were then incubated for one-half hour at 37.5°C. They were then inactivated by heating at 58° C. for 30 minutes and again incubated for one hour at 37.5°C. The bacilli were then removed by centrifuging and the samples subjected to the complement fixation test with antigens of *B. mallei* and *Bact. abortus* (Bang).

In addition to the two sera under discussion, positive and negative controls and the sera from two mules were tested. The results were as follows:

Nos. 33 and 60 and a positive glanders control serum, after treatment with *B. mallei*, gave negative reactions to the test using B. *mallei* antigen, but continued to give positive reactions when tested with *Bact. abortus* (Bang) antigen. These same sera treated with *Bact. abortus* (Bang) gave positive reactions to the test with *B. mallei* antigen and a reduction in the reaction with *Bact. abortus* (Bang) antigen from +4 to +1 with 0.1 cc of serum of No. 33 and from +3 to +1 with No. 60. The two mules and negative sera reacted the same before and after treatment.

Absorption tests were also made in which the primary incubation of the mixture of serum and bacilli was carried out in the ice-box over night. This method proved satisfactory for *B. mallei* but not for *Bact. abortus* (Bang). The sera treated with this organism still reacted with this antigen and was more anticomplementary. This was probably due to autolysis of the bacilli making it impossible to free the serum of antigen.

Through the courtesy of Dr. J. A. Kolmer these sera (No. 33 and No. 60) were tested by him with antigens prepared from *Bact. typhosum*, *B. tuberculosis*, pneumococci, and gonococci. The reactions were negative in each instance.

Both animals were destroyed. A careful necropsy failed to reveal any lesions of glanders or scar tissue indicating healed lesions.

Discussion

The sera of the two horses under discussion first of all contain antibodies for two widely different diseases, one common to the

horse and the other unknown to that species.

It may appear easy to account for the reaction to *B. mallei*, as glanders is a common disease of the horse and has existed to a variable extent in Philadelphia for years. The horses have been in contact, on the city streets, with many animals and have no doubt frequently used the public trough for drinking. On the other hand there is no evidence of the disease either at present or in the past having existed in this stable or in the stable from which they came.

If they are recovered cases then either the infection was so slight as not to produce sensitization to mallein and the repair of tissue so complete as to leave no trace discoverable at necropsy.

These animals were kept under observation over six weeks, at the end of which time the mallein test failed to give a reaction. This seemed to exclude the theory that they were in the incubation stage of the disease. The horses still remaining in the stable were subsequently tested and all reacted negatively.

To account for the presence of specific antibodies for *Bact. abortus* (Bang) is a still harder problem. Both of these animals were kept in the city remote from contact with bovines, and further, both were geldings.

It is difficult to satisfy ourselves that these two animals acquired the immune bodies by contact with the organisms, although this is the most logical line of reasoning. The possibility of natural amboceptor presents itself. In man and some of the lower animals there exists in the blood specific complement-fixing bodies for the red blood cells of other species. These are known as natural or native hemolytic amboceptors or hemolysins. It does not hold true that man or animal, having such substances in their blood, necessarily had to have been in contact with the antigen either directly or indirectly. In fact they are considered as hereditary and not acquired. A very few or a large percentage of individuals of one species may have amboceptor for the blood cells of another.

Might it therefore not be possible that the complement-fixing antibodies encountered in these two horses were of the nature of natural amboceptors?

Even though there is little foundation for such supposition, the questions make us think seriously concerning the possibility of the existence of natural amboceptors for bacterial proteins.

DISEASES OF SWINE[1]

By EDW. A. CAHILL, *Indianapolis, Ind.*

One would be displaying considerable temerity if he were to undertake a discussion of the diseases of swine without first calling attention to the magnitude of the subject. In years past a discussion of this subject was frequently limited to the mention of cholera, tuberculosis and possibly swine plague, as being the only serious diseases of this species. Time has forced a change of opinion in this as in many other matters and as a result it is now well appreciated that swine diseases cannot be as lightly considered and easily diagnosed as was formerly supposed, but that their correct diagnosis and control is an economic responsibility which may resolve into either a tremendous asset or liability to the veterinary profession and which requires the exercise of our best diagnostic skill.

In an effort to meet this changed condition, some institutions require their students to devote from one to two years of lecture and field study to this subject. This being true, it is obviously impossible in the time allotted me to do more than consider briefly some of the more salient points of the subject as they apply in a national manner, while omitting others which might have more local significance. It is realized fully that the conditions mentioned do not describe the detailed picture which is presented in all local outbreaks of disease and they are therefore offered as the protocols of existing conditions in the country as a whole and subject to modification in specific instances.

If swine diseases are classified, either according to their importance to the practitioner in veterinary medicine, or by their economic significance to the livestock interests, it becomes necessary for us first to consider a group of septicemic diseases or conditions which are choleraic in type. Included in such a group is hog cholera, swine plague, enteritis, flu, so-called mixed infection and protein poisoning. This is indeed a motley group, regarding which little unanimity of professional opinion exists. Their existence and significance has been a favorite topic of discussion for the past few years. These discussions, both oral and written, have often been more acrimonious than enlightening, and tend to make amenable to dispute any opinion which

[1]Read at the Conference for Veterinarians, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., February 27-28, 1923.

the practitioner might hold, or any procedure which he might adopt, in dealing with these diseases.

As a result of these divided ideas the profession has been sharply separated into two schools holding different opinions. The one maintains that cholera is the only disease of this group which is responsible for any considerable amount of losses and that the disease is not difficult of diagnosis. The other maintains that diseases and conditions which closely resemble cholera are quite prevalent and are responsible for much sickness and mortality. They maintain that these diseases are often mistakenly diagnosed as cholera with disastrous results. The former school believes that such organisms as *Pasteurella suiseptica, Bacterium suipestifer* and others, frequently present in the respiratory and intestinal flora, are incapable of causing specific diseases and that the extent of their activities is limited to causing extensive secondary involvement when acting symbiotically with the virus of cholera. The latter school believes that, while those organisms do cause extensive secondary lesions in cholera-sick swine, they are also responsible for specific diseases in swine which are in no way affected with the cholera virus. In order that the claims of each school may be definitely appraised and evaluated a short review of the history of this group seems essential.

A decade or more ago it was believed that two micro-organisms were of great importance in so far as they applied to swine diseases. One of these, the *Bacillus suisepticus* (*Past. suiseptica*) was considered responsible for swine plague, which was then believed to be extremely prevalent. The other, *Bacillus suipestifer* (*Bact. suipestifer*), later referred to as the hog cholera bacillus, was believed to be the causative agent of hog cholera. About this time our opinions regarding swine diseases were modified considerably, due to the epoch-making discovery of Dorset and his co-workers, that hog cholera was caused, not by *Bact. suipestifer* but by a filterable virus. Following this discovery it was then assumed that these two organisms, *Past. suiseptica* and *Bact. suipestifer*, together with others which are normally present in the flora of the respiratory or intestinal tracts, were not as significant as formerly supposed, and that they were capable of causing pathological changes, only if they acted symbiotically with hog cholera virus. Experimental data which would justify this radical change of opinion were not available and while European investigators have presented much data which should have controverted the belief, it was generally accepted in this country.

With the discovery of the filterable virus of hog cholera came the discovery of a method of producing an immune serum capable of immunizing against hog cholera. From an economic point of view this discovery was of paramount importance, because it has resulted in the protection of thousands of swine which would otherwise have died from cholera. History shows that the practical application of many important discoveries, particularly those of medicine, is retarded by the extreme enthusiasm with which the discovery is received, since we invariably hope for and expect more from such discoveries than the possibilities justify.

The attitude adopted by our profession, following the discovery of the cause and means of preventing hog cholera, has been no exception to this general rule. Not content with the wonderful ability of anti-hog cholera serum to control hog cholera, the most serious of all swine diseases, we allowed ourselves to believe that it would act as a panacea for most swine diseases, and that if we controlled hog cholera other diseases would have little or no significance. For several years this belief was apparently substantiated, because of the fact that most sick swine proved to be affected with hog cholera, and in the majority of cases anti-hog cholera serum controlled the losses.

For several years subsequent to the acceptance of this belief there were occasional cases in which the serum failed to control the losses, or in which apparently healthy animals became sick after vaccination. These cases represented but a small percentage of the herds treated and unfortunately were seldom carefully investigated, since they were considered as failures of the serum or virus to obtain the desired results. In other words these cases were spoken of as hog cholera "breaks," due to impotence of the products used, and while a small percentage of such cases might be explained in this manner it is to be regretted that more study was not given to such cases.

There is now every reason to believe that during these years we were unknowingly dealing with atypical cases of diseases which symptomatically are closely allied to cholera and which are caused by the bacteria, which, in previous years, were considered important. During the past five years these cases have become exceedingly numerous and it has been observed that many animals which were apparently healthy at the time of vaccination have developed post-vaccination sickness, and that in other cases anti-hog cholera serum, when administered to sick

swine, failed to check the losses, particularly in herds where intestinal and pulmonary symptoms and lesions were pronounced.

Thus it became obvious, either that the serum treatment was not so effective as formerly, or that swine might be affected with diseases other than cholera. Since that time an enormous amount of work has been conducted by investigators to determine which of these conditions prevailed and while there still remains much to be learned, the utilization of facts which have been determined by combined laboratory work and field observation are most salutary for the practitioner who is more concerned with results than an adherence to ideas which are theoretically correct but obsolete for practical purposes.

Before entering into a discussion of the various diseases the following conclusions are offered. It will be noted that in some respects they do not agree with the older text books. For this no apologies are necessary, but the assurance is offered that their application by many of the country's largest swine practitioners has been of material assistance in controlling disease.

1. Hog cholera still continues to be the most serious of all diseases of swine.

2. Hog cholera vaccination has not lost any of its effectiveness and is as valuable now as at any previous time. Any propaganda or beliefs which lessen the confidence of the public in this valuable immunizing procedure will naturally reduce the number of immune animals and increase the percentage of susceptible swine, thus constituting a serious menace to the live stock industry. It matters not whether this result be brought about by those who still insist that all extensive losses of swine are caused by hog cholera or whether it be brought about by irresponsible persons holding erroneous beliefs as to the existence of disease the presence of which has not been proven. There is a happy medium which must be adopted by those who would successfully control swine diseases.

3. That diseases other than cholera do exist and are both widespread and serious. They are serious because it may be found difficult to differentiate between these and hog cholera and since failure properly to differentiate frequently causes discredit to be thrown upon hog cholera immunization. Lesions formerly considered diagnostic of cholera are known to exist in other diseases, and because of this, differential diagnosis is difficult and frequently erroneous.

4. Swine, more than any other genus of animal, possess an

uncanny ability of harboring chronic pulmonary or intestinal lesions, although appearing perfectly healthy. This fact is responsible for most post-vaccination troubles in swine and is too frequently overlooked, when such cases are under investigation. However, this knowledge should not eliminate proper recognition of the occasional, true, cholera "break" which does occur.

5. Hog cholera should always be suspected, regardless of symptoms or lesions, if the affected animals are susceptible to cholera. Conversely, if the affected animals have been properly immunized, and they display the syndrome of other diseases, they should be treated for such, since treatment for cholera will be devoid of results and will destroy confidence in the simultaneous treatment.

6. The majority of our profession have been grossly negligent in so far as they have failed to attach sufficient importance to the question of sanitation. Proper housing, feeding and improved sanitation do much to prevent the propagation of bacterial infections and parasitic infestations of swine.

7. Parasitic infestations in swine are rapidly increasing and must receive our serious consideration, since in addition to the damage for which they are directly responsible, they so devitalize the system that bacterial infection is made possible.

Hog Cholera

While this disease still continues to be the most serious of all swine diseases, experience during the past few years has conclusively demonstrated that cholera is not so easily diagnosed as was formerly supposed. Some have maintained that this is a lesionless disease, and while this opinion has not been generally accepted, it must be conceded that cholera is devoid of typical, specific lesions which make its recognition a certainty. Many have felt safe in making a diagnosis of hog cholera, provided post-mortem examination evidenced the presence of petechial hemorrhages throughout the body, or button ulcers on the intestinal mucosa, or both. This erroneous attitude is undoubtedly responsible for more of the chaos and uncertainty which now applies to swine diseases than any other factor.

The only lesions that can be attributed to the filterable virus are those of an acute septicemia, viz: petechiation, but unfortunately this same condition becomes manifested in animals suffering from other conditions and petechiation is an extremely prevalent condition in septicemias caused by streptococci, *Ps.*

pyocyaneus, Bact. paratyphosum B., Past. suiseptica, et al. Petechia are also observed in animals which have been subjected to extremes in temperature; in those which have been fed on excessively oily or acid material; and in those which have been fed on a ration too rich in proteins; as well as in individuals suffering with parasitic infestations. In view of this knowledge it should require little discussion to convince one that, while petechia are the most constant lesions observed in swine affected with cholera, a diagnosis made on this widely prevailing phenomenon is most insecure and undesirable and that there is no one lesion in cholera-sick swine which can be accepted as conclusively diagnostic.

A second pathological change which is frequently responsible for an incorrect diagnosis in swine is the presence of button ulcers in the intestinal mucosa. At one time it was believed that hog cholera could be diagnosed in the presence of this pathological condition. It has, however, been quite conclusively proven that button ulcers are caused by bacteria normally present in the intestinal flora and that they are not caused by the filterable virus.

Those whose experience permits them to autopsy large numbers of pigs know that button ulcers are observed alike in cholera-sick, cholera-immune and susceptible swine. In swine button ulcers are frequently observed following any intestinal infection, although the remainder of the herd remains well and may later be demonstrated to be susceptible to hog cholera.

What then is the present status of the lesions formerly considered diagnostic of hog cholera? In so far as button ulcers are concerned, it may be said that although these are frequently observed in swine affected with hog cholera, a diagnosis cannot be made on this point, since the ulcers may be observed in swine not affected with hog cholera, and since they are caused by bacteria normally present in the intestinal tract but not by cholera virus. In so far as petechia of the various organs are concerned, these may be present in swine affected with hog cholera, or they may be present in animals affected with numerous other diseases or conditions.

A correct diagnosis of hog cholera is beset with many difficulties and it can safely be made only by a thorough study of the history, symptoms and post-mortem lesions. Most careful investigators are at this time of the opinion that more dependable information for diagnostic purposes is obtained by an extremely thorough study of the symptoms and history, than by placing too much

dependence upon post-mortem lesions. While the post-mortem lesions of cholera closely resemble those found in other diseases, the history and symptoms are distinctly different. In view of these circumstances greater consideration should be given to a thorough study of the history and symptoms, without lessening our diligence in post-mortem investigation.

It is becoming more generally appreciated that the expressions "vaccination" and "immunization" against cholera are not synonymous. The public should be taught that vaccination is a mechanical process, while immunization is the end-result of proper vaccination and is dependent upon many immunological factors over which the operator has no control. Active hog cholera immunization is the nearest example of absolute immunity which is exhibited by animals, yet certain field conditions justify the belief that under certain unknown conditions this strong immunity may be shattered. Those who are called upon to investigate post-vaccination trouble cases know that in many instances they are dealing with a low type of cholera and that the disease is diagnosed as hemorrhagic septicemia or some other disease, on account of atypical cholera manifestations and a preponderance of secondary lesions.

Investigation has conclusively demonstrated the fact that the majority of such cases are due either to the use of insufficient doses of virus or to the vaccination of pigs while they are yet too young. The risk involved in the use of small amounts of virus is much greater than from using too much. Strict adherence to a minimum dose of two cc will do much to eliminate these cases. Fortunately the demand upon veterinarians for the vaccination of pigs under forty pounds is gradually lessening. Experience has proven to most practitioners that many pigs vaccinated as babies will develop cholera if they come in contact with virulent virus at a reasonable period subsequently. Animals so vaccinated are never safe for brood purposes and it is this class of hogs which keep alive a low type of atypical cholera which is difficult of diagnosis.

Hemorrhagic Septicemia

Probably no disease in animals has been the cause of more animated discussion than hemorrhagic septicemia. This is not a new disease, but is an appellation now generally given to swine plague which, previous to 1900, was considered to be extremely prevalent in this country. Subsequent to the discovery of hog

cholera virus, *Past. suiseptica*, the causative factor in hemorrhagic septicemia, was relegated to the list of bacteria having little pathological significance. For more than fifteen years it retained its subservient role, notwithstanding the fact that our European confreres were constantly reporting authenticated cases of swine palgue.

When the increased number of post-vaccination trouble cases could no longer be ignored and investigations were begun, it was found that the filterable virus of cholera was not present in the blood of many of these cases and that the trouble was something other than cholera. It was then determined that in many of these cases *Past. suiseptica* was isolated, sometimes in mixed, but more frequently in pure culture, from various parts of the body. When animal inoculation proved the virulence of the organism, hemorrhagic septicemia was diagnosed. This diagnosis met with a storm of protest from persons located in sections of the country other than the corn belt, and whose activities were largely of a laboratory nature, but with limited opportunities to observe these changing field conditions.

Those who decry the increased prevalence and importance of this disease do so largely because *Past. suiseptica* is considered by most investigators to have but little pathogenicity when injected into swine, and because Moore and other investigators have shown that the organism is normally present in the respiratory tract of a large percentage of healthy swine. This latter fact is used to minimize the significance of cultures obtained from sick swine. Those opinions are, to a considerable extent, modified by the recent work of Spray, who shows that *Past. suiseptica* is normally present in but a very small percentage of healthy lungs, but in a very high percentage of pneumonic lungs.

The significance of *Past. suiseptica* isolated from the lungs is debatable, but the significance of this organism, when isolated in pure culture from the blood, spleen, glands or abdominal exudate, can hardly be questioned. In many outbreaks of disease *Past. suiseptica* has been isolated in pure culture from organs other than the lungs, its virulence has been proven by animal inoculation and the organism recovered from the inoculated animals, thus fulfilling all the postulates usually considered necessary to diagnose a specific disease. In addition, the absence of the cholera virus has been demonstrated by animal inoculation. The alleged inability to reproduce this disease by injecting swine with *Past. suiseptica* becomes mythical, if instead of using stock

cultures, whose virulence has been largely destroyed by long-continued, artificial cultivation, investigators will use as their antigen strains freshly isolated from the acute cases known to exist in the corn belt.

It is hoped that this discussion will not be interpreted as meaning that a diagnosis of hemorrhagic septicemia is always justified. I hold no brief for the disease as such and I know that, as in other genera of animals, it has at times been diagnosed when proper investigation revealed other causes for the trouble. To deny its prevalence, however, when its existence can be proven bacteriologically, and when the clinical and post-mortem picture of field cases is identical with that described in text books, is to invite a continuation of the diagnostic difficulties which have existed.

We have no way of knowing the degree to which this disease exists in Pennsylvania, but assume that it is a negligible factor. It has been stated that the disease does not exist in the East. This is not correct, since it has been definitely diagnosed in New Jersey, New York and New England. In the latter it prevails extensively, but probably in no Eastern state is it as prevalent as in the West.

The cycle of this disease is clearly defined. Previous to the discovery of anti-hog cholera serum this disease was wide-spread and acute in character. Gradually its virulence and incidence waned and only chronic cases were seen, while during the past few years the causative agent has developed enhanced virulence and the disease has become extremely prevalent and acute. The symptoms and lesions of uncomplicated hemorrhagic septicemia in swine are almost identical with those in other species, but we are less willing to accept them as such, since at least one other disease—cholera—displays practically the same lesions. If this disease is not recognized and is erroneously diagnosed and treated as hog cholera, alarming and extremely undesirable results generally follow the administration of the simultaneous treatment.

Many so-called "breaks" subsequent to vaccination are due to the activities of *Past. suiseptica*, the causative agent of this disease. Benner and Birch have observed that swine possess a marked ability to harbor chronic lung lesions, although apparently in perfect health. This observation, made by Eastern investigators, is well appreciated by swine practitioners throughout the hog belt. It is known that the majority of swine have, during the past few years, harbored a small area of infection in

the apical lobe of the lungs. This small area, which is glazed in appearance and heavily infiltrated with a serous exudate containing *Past. suiseptica*, remains localized until some devitalizing condition results in the liberation of the organisms, followed by an acute attack of hemorrhagic septicemia.

This devitalization may be brought about by several conditions, such as shipment, exposure to inclement weather, insanitary surroundings, improper housing or feeding. One of the most common of these, however, is the administration of hog cholera virus in the form of the simultaneous treatment. When any of these devitalizing conditions are superimposed upon this latent infection, an acute attack of disease generally follows. If it were possible for all of us to destroy and autopsy a considerable number of apparently healthy animals, and observe this chronic affection of the apical lobe, skepticism regarding this disease would rapidly disappear, and if, after such an autopsy, the remainder of the apparently healthy herd could be subjected to the simultaneous method of hog cholera immunization, and the results noted, there would be fewer who would diagnose the resulting conditions as hog cholera "breaks" and more who would more accurately diagnose these as hemorrhagic septicemia.

Too frequently post-vaccination troubles are diagnosed as cholera, merely because autopsy reveals petechiation of various organs. As pointed out previously, this condition may be indicative of hemorrhagic septicemia or other conditions as well as cholera, while in recently immunized animals petechiation is not abnormal, even though the animals remain well. If such cases are carefully investigated, the symptoms are generally negative to cholera and lesions which are indicative of other conditions can generally be observed. Not infrequently our diagnosis is incorrect, not for want of lesions, but because of our unwillingness to appraise them definitely.

Differential Diagnosis

The clinical picture, both ante- and post-mortem, of animals affected with hemorrhagic septicemia is sufficiently different from the clinical picture of hog cholera that there seems little justification, in most cases, for an erroneous diagnosis. Hemorrhagic septicemia is characterized ante-mortem by a rapid onset, intense coughing and labored breathing, resembling so-called "thumps," and by a unilateral or bilateral nasal discharge. The appetite is retained, except in the peracute cases, where marked

prostration is the rule. The temperature is frequently inverse to the symptoms. Sick animals may show a normal temperature, while those which physically appear healthy have temperatures ranging from 104° to 108°. In either case the temperature does not remain consistently high, as in cholera, but fluctuates considerably from day to day.

Hog cholera, on the other hand, is typified by progressive infection which gradually affects the entire herd, the onset is not sudden, the temperature is elevated and does not fluctuate to any degree, while the affected animals manifest a peculiar breaking or knuckling at the hocks, which is not observed in other diseases. This knuckling is characteristic and ought not to be confused with staggering from intense weakness, which may be observed in any disease. Inappetence and a tendency to hide in the bed is marked, while diarrhea is fairly constant. The mortality in cholera is excessively high, while in hemorrhagic septicemia it is comparatively low. In cholera flesh is lost rapidly, while in hemorrhagic septicemia this is not so noticeable.

Unless there be a secondary pulmonary infection, animals affected with cholera show a marked absence of cough, nasal discharge or labored breathing. Petechiation is the only post-mortem lesion which can be attributed to the filterable virus. Extensive lung or intestinal lesions are proof positive of secondary infections. Although petechiation cannot be depended upon for diagnostic purposes, since it is characteristic of both diseases, there are a few fine points of differentiation which are of significance in septicemias other than hog cholera. In these diseases petechiation tends to be irregular in size and outline, and to vary from pin-point size to large splotches. In uncomplicated hog cholera the ecchymoses consist of small, circumscribed areas, uniform in size and shape, with a tendency to be pronounced and clearly defined in two specific places. These are the crest of the ileocecal valve and the lymphatic glands. In hog cholera the lymphatic glands are generally enlarged, quite dark, and upon cross-section reveal clean-cut, isolated, circumscribed petechiae, whereas in other diseases caused by bacteria the lymphatic glands tend to become enlarged and engorged with little tendency for well defined and circumscribed petechiation.

The peracute type of hemorrhagic septicemia is most apt to be confused with cholera. In this type onset and death are usually sudden and the post-mortem changes are limited to hemorrhages and petechiae. It is in these cases that the different

appearance of the petechiae will be of assistance. In the acute cases the symptoms are classical and the constant presence of pathological changes in the lungs, varying from congestion to red and grey hepatization, or even necrosis, with marbled areas, makes a diagnosis comparatively simple. In swine which have been properly immunized against cholera a differential diagnosis is not particularly difficult, if the entire syndrome is considered.

However, we face a different condition in swine which are susceptible to cholera, and it cannot be too strongly emphasized that in these cases a diagnosis of hemorrhagic septicemia be most guarded and that any treatment which may be recommended for that disease be made supplemental to the use of anti-hog cholera serum. Where hemorrhagic septicemia is suspected, but protection against cholera is considered necessary, the serum-alone treatment offers the most rational procedure. If the simultaneous treatment be used, a very heavy mortality usually follows on account of the virus being superimposed upon an already existing infection.

Necrotic Enteritis

This disease has, for several years, been very prevalent in some sections of the country. At one time it was termed intestinal necrobacillosis, and *B. necrophorus* (*Actinomyces necrophorus*) was supposed to be the etiological factor. More careful observations revealed the fact that *B. necrophorus* was incapable of causing the disease, and that it acted only in a secondary manner, after the intentinal mucosa had undergone pathological change. The expression "intestinal necrobacillosis" is therefore a misnomer. Keehn believes that *Ps. pyocyaneus* is the causative agent, but this belief has not been substantiated, while Murray, Benbrook and Dimock believe that the protozoon, *Balantidium coli*, is responsible for the condition.

The majority of investigators now believe that several bacteria ordinarily present in the intestinal flora may be the exciting factor. At least two of these, *Bact. paratyphosum B.* and *Bact. suipestifer*, are known to be capable of causing this condition, after the normal tolerance between bacteria and host is disturbed and the resistance lowered by any devitalizing condition. Like other bacteria of low virulence these organisms may, under certain conditions, develop enhanced virulence and become so pathogenic that at times the disease becomes highly contagious, although ordinarily it is sporadic in type. Since necrotic enteritis is not difficult of

diagnosis, the important factor connected therewith is the fact that this disease can and does exist as an entity in swine which are immune to hog cholera, as well as in cholera-susceptible swine.

Animals affected with this disease must be handled in a manner entirely different from those affected with hog cholera. This condition undoubtedly results from parasitic infestation more frequently than is generally appreciated and for this, if for no other reason, parasitism in swine deserves our serious consideration. The disease is characterized first by an acute enteritis, affecting the intestinal mucosa and associated lymphatic glands. Following a passive congestion and formation of a diphtheritic exudate on the intestinal mucosa, there is a thickening of the entire intestinal tract, which at times becomes so intense that the lumen may be almost occluded. Secondary invaders now become active and are responsible for the button ulcers and necrosis which follows. This necrosis may involve large areas of the intestinal tract which eventually become dry and leathery in appearance.

Clinically the disease is characterized by progressive emaciation and the inability on the part of the affected individual to assimilate its food through the necrotic or dried intestinal mucosa, resulting in progressive and intense emaciation. This entire syndrome, spoken of as "necrotic enteritis," is practically the same condition as described by Salmon and referred to as Salmonellosis, hence it is not a new disease.

Mixed Infection

This is a meaningless expression, the use of which is fortunately largely discontinued. It is of course admitted that two infections may co-exist in the same animal, but this does not justify the use of the term "mixed infection" as though it were a specific disease. In diphtheria, and in tuberculous lesions, bacteria other than the specific causal organisms are generally active, yet those diseases are not spoken of as mixed infections. In swine so-called "mixed infection" proves upon proper investigation to be either hog cholera, hemorrhagic septicemia or necrotic enteritis, or a combination of these. A diagnosis of mixed infection is a blanket covering ignorance, which lowers us to the level of the charlatan, whereas the diagnosis of a specific disease puts the professional man on a pinnacle which the laity will not even approach. In order to obtain desirable results our treatment, like our diagnosis, should be specific—not "shot-gun" in character.

"Flu"

During the past few years considerable difference of opinion has existed regarding the possibility of a disease in swine which might be likened to influenza in the human. This has been designated as "flu," and its existence as a specific disease has been a point of considerable dispute. With one exception all investigators who have studied this alleged condition have denied its existence, while many have isolated *Past. suiseptica* in pure cultures from supposed cases. During the past few months the Bureau of Animal Industry has added a somewhat official recognition to this disease. The value of this recognition lies not in the defining of the symptoms, cause and lesions of a recognizable disease, but in the admission that swine do suffer with septicemic conditions similar to cholera in which the filterable virus is absent.

None of the investigators has been able to define the causal organism which might be responsible for this disease; neither have they been able to outline the syndrome which would include symptoms and lesions sufficiently accurate that this disease might be differentiated from others. The symptoms generally attributed to "flu" are extremely rapid onset, coughing, disturbed respiration, including thumps, prostration, a rise in temperature, all of which affect the majority of the animals in the herd. The mortality is not more than two to three percent and recovery is about as rapid as the onset. The most serious factor of this condition is the loss of weight of the affected animals.

Several of the best authorities on swine diseases are of the opinion that "flu" is a peracute form of hemorrhagic septicemia and is not a specific disease. Since others take the opposite opinion and since the mortality accompanying the disease is not serious, we can well afford to wait for investigations which will more definitely ascertain the true status of this alleged disease.

Botulism

Some months ago the veterinary world was startled by the publication of an article which left the impression that most post-vaccination trouble in swine was botulism and that the condition might be brought about by contaminated serum and virus. The consequences of such a condition, if proven, would be so serious that they could hardly be estimated. Extended investigations which have since been conducted by the writer and others indicate clearly and conclusively that swine are much

more resistant to botulism than other animals, and that there is no danger of anti-hog cholera serum or hog cholera virus containing botulinus toxin. One need not fear his ability to differentiate between botulism and other diseases of swine, since the clinical picture of the former disease is entirely unlike that of any of the diseases which are prevalent. The symptoms are entirely of the nervous system and in a manner resemble tetanus. There exists considerable doubt as to the existence of this disease in swine, except cases where the animal has been artificially infected.

Erysipelas

This disease has appeared during the past few years in several western states. Its existence has been confirmed by bacteriological findings. Since the disease is quite prevalent in Mexico, its introduction into this country on a larger scale would not be particularly surprising, but would be a matter of concern. Fortunately the symptoms and lesions of the disease differ sufficiently from other diseases that it is usually not difficult to diagnose.

Malignant Edema

This disease is somewhat more prevalent in swine than formerly. On a few occasions outbreaks have been due to the presence of the causal organism in the virus used in vaccinating against cholera, but in most instances the outbreak has been due to the presence of the causative organism on the skin of the hog or in the soil. The needle wound following immunization has furnished the portal of entry.

Abortion

As might be expected, abortion disease in swine is greatly on the increase. In many instances the affected sows have followed infected cattle or been pastured on adjacent ground. There are many cases, however, which cannot be explanied in this manner, nor can the means of transmission be determined. It is to be hoped that shipping centers for swine will not become as generally infected with *Bact. abortus* (Bang) as they now are with other viruses. As difficult as is the problem of handling abortion disease in cattle, it is considerably enhanced in the case of valuable swine. The detection of aborters and cases having vaginal discharge is exceedingly difficult, while proper segregation is almost an impossibility. If the prevalence of this disease continues to increase its control will present an exceedingly serious problem.

From the above it is quite apparent that we may safely assume that, with the exception of abortion disease, there are no new diseases of swine which are of particular significance and that our efforts should be concentrated on the control of hog cholera, hemorrhagic septicemia and necrotic enteritis. These three diseases, like most other infectious diseases, have a well defined cycle and the diseases are prevalent, and the symptoms and lesions acute, in proportion to the virulence possessed by the organism which is responsible for each disease.

Hog cholera generally travels in cycles of approximately seven years. Between these years the virulence of the virus gradually diminishes and the incidence of the disease becomes extremely low; then after a period of years the virulence and incidence gradually increase, until the disease again assumes serious proportions. The same condition applies to hemorrhagic septicemia and necrotic enteritis. These diseases travel in cycles, although their period of ascendency and quiescence is not quite so clearly defined. These, like most infectious diseases, are not difficult to diagnose when their incidence is high and the symptoms typical, but their diagnosis becomes increasingly difficult when they become subacute and atypical in character.

While these diseases are prevalent, it is necessary that we be capable of diagnosing hemorrhagic septicemia and necrotic enteritis, in order that these diseases may not be diagnosed and treated as hog cholera, since satisfactory results are rarely observed under such conditions. There is equally great danger of low-grade hog cholera, accompanied by atypical symptoms and lesions, being diagnosed and treated as necrotic enteritis or hemorrhagic septicemia. Both of these errors have been and are being made and it is such errors which preclude the possibility of successful treatment, or of retaining public confidence.

It is a notorious fact, as stated before, that necrotic enteritis and hemorrhagic septicemia are most frequently diagnosed in sections of the country where "baby-pig" immunization is the rule, and it is equally well known that in these sections the treatment is not entirely successful on account of mistaken diagnoses. Conversely, hemorrhagic septicemia and necrotic enteritis are far less frequently diagnosed in sections of the country where swine are never given the simultaneous treatment until they reach forty pounds in weight, yet in these sections, when these diseases are prevalent, the affected animals respond to specific treatment in a satisfactory manner.

The corollary is plain when animal inoculation, combined with a thorough field investigation, proves the presence of cholera virus in the former and its absence in the latter cases. Without desiring to open a discussion on "baby-pig" immunization, which is a controversial point, it may be said that the preponderance of experimental evidence still indicates that "baby-pig" vaccination is not entirely dependable, while practical investigation indicates that many cases of low-grade cholera in pigs vaccinated as babies are diagnosed as other diseases. In seems advisable, therefore, that insofar as possible, the immunization of baby pigs should not be practiced and that whenever this practice is necessary that such individuals should be revaccinated at a subsequent date.

While it is generally appreciated that the organisms responsible for necrotic enteritis and hemorrhagic septicemia are normally present in the body of many healthy individuals, and become pathogenic only when the vitality of the host is lowered, it is likewise true that these diseases are, to a large degree, continually propagated by improper surroundings, such as insanitary hog wallows and feed lots which are used continuously over a period of years. These latter conditions offer excellent pabulum both for the organisms responsible for these diseases and for parasites causing animal infestations.

The practitioner who does not devote a reasonable portion of his time to eliminating such conditions is falling considerably short of doing his full duty. Likewise a proper survey of the housing facilities and the diet which affected animals are receiving is of the utmost importance. Many cases which clinically cannot be distinguished from hemorrhagic septicemia and so-called "flu" are known to be due to the condition now referred to as protein poisoning, which is characterized by intense prostration and thumps. It is common experience that in many such cases the only treatment which is required is a complete change of diet and the elimination of highly nitrogenous food.

In conclusion I would urge you to realize that the main difference between success and failure in the control of swine diseases lies in the observation of small details. The expert whose services are always in demand for consultation fully appreciates that his consultant has had an opportunity to observe all that is necessary to make a diagnosis, yet in spite of this the one is frequently successful where the other fails. This is possible because the former has long since learned that the

difficulties in swine diagnosis are eliminated by observing closely the most minute details of history, symptoms and lesions and to appraise each for its true worth. In addition to this he fully appreciates the value of making a diagnosis, only after he has made a careful survey of the sanitary conditions, housing and feeding.

When the practitioner learns the value of making such a survey a part of his routine procedure, and insists on examining in a most deliberate manner the apparently healthy swine which he intends to immunize, he will discover many which are not in proper condition for immunization, thereby eliminating post-vaccination troubles and thus gain the confidence of his community. The practitioner who follows this procedure feels no need for coining new names for old diseases, nor for originating new diseases to cover up post-vaccination trouble cases, due to conditions which a more acute observer would have detected before vaccination.

Plan To Go To Montreal, August 27-31.

VETERINARY SERVICE

The veterinarian should have recognition for the service he can and does perform in disease control. What, for instance, would be the status of our hog industry at the present time if it had not been for the service in hog cholera control rendered by the veterinary profession? At the present time we have several animal disease problems seriously in need of the service the competent veterinarian can give. Notable among these are tuberculosis in cattle, swine and chickens, abortion in cattle and swine, and others only partially solved or as yet practically untouched. Furthermore, we may expect new diseases in the future, if we are to judge by the past. So we need a competent veterinary force on guard and ready to serve.

The practicing veterinarian has an important place in the live stock industry of the community he serves. He can fill that place only if he has the confidence of the community and the service he can render is recognized. If he deserves that confidence, the Illinois plan, by acquainting farmers not only with the veterinarian himself but also with veterinary problems, should prove beneficial.

Editorial in *Chicago Daily Drover's Journal*.

AN EPIZOOTIC OF ASPERGILLOSIS IN CHICKENS

By JOHN E. GUBERLET, *Stillwater, Okla.*

*Parasitologist, Oklahoma Agricultural Experiment Station**

During the late winter and spring of 1922 an epizootic of aspergillosis was prevalent in flocks of poultry in the vicinity of Stillwater, Oklahoma. The writer has encountered this disease in individual birds on other occasions, but usually only a single bird in a flock was affected. In this particular locality the disease became an epizootic and appeared to be fairly contagious. The disease occurred especially among birds that were confined in small pens, where they had exceedingly limited scratching pens, and where the litter was not changed as often as necessary. A number of poultry raisers suffered losses of more than 50 percent of their flocks during this epizootic. Birds on the same farms that were allowed free range, but given the same feed, were far more resistant than those closely confined. In fact some farmers apparently lost none of their birds that were on free range.

Aspergillosis has been observed in the United States by a number of writers but it seems that the records show in most instances only occasional cases and not in epizootic form. Ward and Gallagher (1922:112) state that young chicks frequently are attacked by an acute form known as brooder penumonia. A number of cases have been recorded of birds confined in parks, such as cases reported by Mohler and Buckley (1902), from the National Zoological Park in Washington. Aspergillosis is no doubt more prevalent than we realize, as it may often run a mild and harmless course, as suggested by Moore (1916:286). The writer deemed it advisable to report upon the conditions that he has found, as it seemed rather unusual for such a severe epizootic of this nature to occur among adult birds.

PREDISPOSING CAUSES

The predisposing causes of this epizootic of aspergillosis were due to a number of conditions. The birds chiefly affected in each case were confined in small pens and were given a diet with a high percentage of protein. In addition to this they had a very small amount of litter in which to scratch and therefore had very little exercise and no green feed whatever. Certain of the

*Resigned July 1, 1923.

conditions and symptoms resemble the nutritional disease discussed by Beach and Freeborn (1922:15). This was especially true for some weeks before the epizootic of aspergillosis began. Before the aspergillosis symptoms appeared there were some birds which showed typical symptoms of the nutritional disease, probably visceral gout. At autopsy a number of the birds showed very pale kidneys, a typical protein poisoning, also chalky urate deposits on the liver, pericardium and other organs.

When the birds were in this weakened condition a supply of feed was obtained which was in a very moldy condition, really unfit for feeding. After this was fed for several weeks the epizootic of aspergillosis began. Without exception, on the poultry farms where asperigillosis was prevalent, feed was obtained from one particular feed house, which had a supply of moldy feed on hand. On the farms where the birds had free range and some green feed, they had enough natural resistance to withstand the *Aspergillus* spores, but where the birds were closely confined, and were already suffering from a nutritional condition, they became easy victims to the attacks of *Aspergillus fumigatus.*

Symptoms

The first symptoms appear in eight to twelve days after inoculation with spores of *Aspergillus fumigatus,* the incubation period being practically the same for inoculations, whether they were oral, intratracheal or subcutaneous. The first condition that is noticed is a lessened activity of the bird, a slightly diminished appetite, a slightly darkened comb, especially at the edges. This is followed by isolation, droopiness, ruffled feathers, elevated temperature, much darkened comb, complete lack of appetite and great thirst. As the disease progresses there is a marked diarrhea accompanied by emaciation and weakness.

During the advanced stages the eyes become watery and the eyelids may adhere, but as a rule there is no accumulation of cheesy material within the eyelids. There may be a watery discharge from the nostrils, accompanied by rattling sounds during respiration. After four or five days the birds become prostrate and gradually pass into a comatose condition and die. In the advanced stages of the disease there is always a typical, foul odor present, whether the bronchi, lungs, air spaces or alimentary tract are involved.

The symptoms may vary somewhat according to the organs involved. If the mouth and esophagus are affected, the birds may

have difficulty in swallowing, and there are usually cheesy, yellowish-white or gray nodules in the mouth and esophagus. When the bones are affected the bird will show lameness. When the lungs and bronchi are involved, breathing is quickened and there is frequent sneezing and often gasping for breath.

Treatment

Very little apparently could be done in the treatment of the sick birds. A number of different remedies were tried, but nothing seemed to prove effective after the birds began to show symptoms. The lives of a few of the affected birds apparently were prolonged from one to five days by feeding potassium iodide, but none were cured. All of the affected birds, or any that appeared in any way suspicious, were isolated and the rest of the flock were taken away from the old pens and turned out on a range where they had plenty of green feed and at the same time nearly all protein feeds were discontinued.

Very few cases of aspergillosis occurred after the birds had access to new and clean surroundings with plenty of green feed. Cleanliness, both of the premises and of the feed, sufficient range and green feed seem to be the preventive measures necessary to keep aspergillosis from starting in a flock.

Post-Mortem Lesions

Autopsies on birds where the lungs, bronchial tubes and trachea were involved showed large masses of mycelia, sterigmata and spores of *Aspergillus fumigatus*. The trachea and bronchi in some cases were completely filled with the mycelial mass. White, gray, or greenish nodules or masses were displayed within one or both lungs. These were composed of a mycelial mass, together with a caseous exudate, consisting of epithelial cells, leucocytes, and sometimes some red blood corpuscles. Frequently abscesses are found in the areas immediately adjoining the lungs.

When air-spaces throughout the tissues of the body and bones are affected, these areas are more or less filled with pseudo-tubercular nodules. The nodules range in size from that of a pin-head to nearly that of a small pea. Such nodules are composed of mycelia and a caseous material, composed to some extent of degenerate cells. Some cases show numerous nodules in the subcutaneous tissue. These vary in size from that of a pin-head to that of a pea. Similar nodules may be found in the spaces between the muscles.

Autopsies on birds where the mouth, esophagus and intestines are involved show numerous nodules, especially in the pharynx and esophagus. Nodules are also occasionally found in the crop, proventriculus and even in the small and large intestines. In the alimentary tract the white or grayish nodules are bead-like in appearance and vary in size from that of a pin-head to that of a large pea. Microscopically, they are composed of mycelia, numerous flattened or flaky epithelial cells, which have become degenerated, and leucocytes.

There is also found associated, with the other elements in these nodules, numerous yeast cells (*Saccharomyces* sp?). The yeast cells do not appear to be pathogenic, however, because when large numbers of the cells were given to healthy birds, either orally, intratracheally, or subcutaneously, the results were negative. The yeast cells were not found in lesions other than those in the alimentary tract. The yeast cells were cultured very readily from the lesions, intestinal contents and from the grain that was being fed to the birds. All birds autopsied were extremely emaciated and nearly all of them showed that death resulted from intoxication.

Culture Media

Cultures were made from the lesions in various parts of the body, at the autopsies of affected birds. Growths of *Aspergillus fumigatus* were readily obtained from the lesions, as well as from the contents of the alimentary canal and droppings. In making the cultures from the lesions of the alimentary tract, and also from the contents of the tract, cultures of a yeast (*Saccharomyces* sp?) were obtained. Luxuriant growths of both the yeast and *Aspergillus fumigatus* were obtained from the feed given to the birds. The media used in cultivating the mold were bread, potato and beer-wort agar.

Experiments

A large number of experiments were performed on birds to determine the cause and the course of the disease. Several are reported here in detail. The chickens used in experiments 1 to 9, inclusive, are from a flock that was fed practically the same ration as the birds in the affected flocks. Their diet consisted of a high percentage of protein. At the time the experiments were begun they were in good health.

Experiment No. 1. April 6, 1922. Vigorous male bird. Given subcutaneously 10 cc of a suspension, in physiological salt

solution, of *Aspergillus fumigatus* spores taken from macerated nodules. The bird appeared normal in every respect until April 14, when it appeared less active than usual. The comb showed slight, darkened areas, especially at the edges. April 15: Symptoms were marked, comb very dark, bird droopy, lack of appetite and great thirst. Temperature 108½°F. April 16: Bird gradually grew worse, weaker, and a marked diarrhea of watery, yellowish-white material. No food taken. April 17, 18, 19: Bird gradually grew weaker. Eyes became watery and were kept closed most of time. Temperature 108°F. April 20: Eyes closed most of time. No food taken and apparently a diminished thirst. Diarrhea. Temperature 107°F. Bird experienced some difficulty in breathing. April 21: Eyes sealed nearly shut, slight discharge from nostrils and bird was breathing through mouth part of time. Temperature 106°F. April 22: Bird prostrate. Breathing through mouth, rattling sounds during respiration. Bird died on this date..

Autopsy: Marked emaciation. Organs presented a typical picture of systemic toxemia. Small abscess at site of injection, composed of mycelia and caseous exudate. Small bead-like lesions in various places in the subcutaneous connective tissue, especially on the ventral surface of the body. Two or three small lesions in pharynx, but esophagus and alimentary tract absolutely free. Few small lesions in both lungs, but larynx and trachea were free. The upper portion of the bronchi was slightly affected. Lungs and alimentary tract gave forth typical, foul odors.

Experiment No. 2. April 6, 1922. Adult male bird in good health. This bird was given, intratracheally, a few drops of a concentrated suspension of *Aspergillus fumigatus* spores taken from macerated nodules. For several days the bird appeared normal and ate heartily. April 13: Bird appeared less active than usual, comb slightly darkened, slight rattling sounds during respiration. April 14: Patient showed marked symptoms, comb very dark, some difficulty in breathing, slight diarrhea. Temperature 108°F. April 15: Bird weak, difficult breathing, often gasping for breath. Eyes watery. April 16: Bird nearly prostrate, eyes sealed nearly shut, gasping for breath, diarrhea. Temperature 106°F. April 17: Bird comatose in morning and died during the day.

Autopsy: Marked emaciation; condition of body showed decided toxemia; lungs, trachea and bronchi contained numerous lesions of aspergillosis. Lesions were also fairly numerous

throughout the abdominal air spaces. Abscess just posterior to lungs. Typical, foul odor was present.

Experiment No. 3. April 6, 1922. Adult female bird in good health. Bird given, by mouth, large numbers of *Aspergillus fumigatus* spores from macerated lesions. This bird was normal and active and had a good appetite for several days. April 15: Comb slightly darkened at edges and bird showed less activity than usual. April 16: Symptoms marked, comb dark, droopy, feathers ruffled. Apparently no appetite but considerable thirst. Small lesions in esophagus and pharynx. Temperature 107½°F. April 17, 18, and 19: Gradually grew worse, diarrhea, eyes watery. Temperature 107½° to 108°F. April 20. One eye sealed nearly shut. Bird prostrate. Slight discharge from nostrils. April 21: Bird nearly dead. Both eyes sealed shut, discharge from nostrils, rattling sounds from lungs. April 22: Bird dead.

Autopsy: Extreme emaciation. Numerous lesions in mouth, pharynx, esophagus, crop, proventriculus, and a few in both small and large intestines. Larynx, glottis and trachea were absolutely free from lesions. One lung contained a cheesy mass of mycelia, spores and some pus. No lesions in any other part of body. Alimentary tract and lungs gave forth typical foul odor. Typical picture of toxemia.

Experiment No. 4. April 14, 1922. Female bird in good health. This bird was given, subcutaneously, a 10-cc suspension of *Aspergillus fumigatus* spores in physiological salt solution. These spores were taken from a culture grown on beer-wort agar. The medium in this case was inoculated from lesions of affected birds. This bird remained in good health until the evening of April 22, when it appeared slightly droopy. On April 23, the condition of the bird appeared more droopy. From this time on the symptoms became more pronounced and the bird gradually weakened until its death, on May 3. The symptoms and autopsy revealed practically the same findings as recorded in experiment No. 1.

Experiment No. 5. April 14, 1922. Healthy female bird. This bird was caused to inhale *Aspergillus fumigatus* spores from cultures, and also had large numbers of spores introduced into the larynx. The cultures were made from lesions and grown on beer-wort agar. No symptoms were noticed for some days and bird was active until April 23, when she showed less activity than normal. On April 24 symptoms were marked and the condition

gradually became more grave until May 1, when death came. The symptoms and autopsy were similar to those recorded in experiment No. 2, except that the air spaces of the abdomen, bones and connective tissues were somewhat more involved.

Experiment No. 6. April 14, 1922. Female bird in good health. Large quantities of *Aspergillus fumigatus* spores from cultures were introduced into the mouth and esophagus of this bird. The cultures were made from lesions and grown on beer-wort agar. April 25: Subject showed a slight decrease in appetite and was not so active as usual. April 26: Slightly droopy and a diminished appetite, with considerable thirst. Comb somewhat darkened. April 27: Symptoms marked and bird gradually became weaker and more inactive, until May 7, when it died. Symptoms and autopsy were comparable to those of experiment No. 3, except that the condition seemed less acute during the earlier stages. The lungs and air spaces were somewhat more involved than where the spores were given in suspension.

Experiment No. 7. May 1, 1922. Female bird in good condition. Large numbers of spores from cultures of *Aspergillus fumigatus* were given into the trachea. Cultures made from moldy grain, such as had been fed to the birds. This did not develop into an acute case. Symptoms did not appear until May 11, and then they were only slight. This condition lingered until May 22, before the bird died. There was great emaciation and only the lungs and air spaces were involved.

Experiment No. 8. May 1, 1922. Female bird in good health. Suspension of spores grown from grain or media were given subcutaneously. Abscess developed at site of injection. Bird became highly emaciated and was finally killed. At autopsy lesions of aspergillosis were found in the subcutaneous spaces but in no other tissues.

Experiment No. 9. May 1, 1922. Female bird. Given large numbers of spores from cultures of *Aspergillus fumigatus* by forcing them into the esophagus. The cultures were made from the grain. The result was negative.

Experiment No. 10. Birds used in the following experiment were in good health, taken from a free range, where they had plenty of green feed, and given a diet with a comparatively low percentage of protein. May 3, 1922: Given intratracheally a few drops of a concentrated suspension of spores taken from lesions of affected birds. May 12: Bird showed some indications of droopiness, took food, but comb slightly dark. Case did not

become acute until May 16. Bird gradually grew weaker and died on May 22. Condition similar to those recorded for experiments Nos. 2 and 5.

Experiment No. 11. May 3, 1922. Vigorous female bird. Given subcutaneously a suspension of spores from lesions of affected birds. May 13: Slight symptoms noticeable. Condition did not become acute until May 18 and the bird died on May 24.

Experiment No. 12. May 3, 1922. Female bird. Given orally a mass of spores from macerated lesions of affected birds. The result was negative.

Numerous experiments have been conducted where *Aspergillus fumigatus* spores have been cultured from grain and tested orally, intratracheally and subcutaneously, on strong, vigorous birds, taken from free range, where they have had plenty of exercise and were given a diet with a low, or reasonably high, protein content. In some instances where the inoculations have been repeated, at intervals of two or three days, mild cases could be developed. In most of the cases the results were negative. Birds that have a low vitality and a weakened resistance soon develop toxemia after repeated inoculations.

Discussion

From the foregoing experiments it is evident that the spores of *Aspergillus fumigatus* are not highly virulent. In fact it seems that they are not particularly pathogenic except under certain conditions where the resistance is decidedly lowered. Birds that are allowed free range naturally have greater vitality and consequently greater resistance to various types of disease than birds that are fed on a high percentage protein diet without sufficient range and exercise. A highly concentrated protein diet, without exercise, would tend to overtax certain organs of the body and at the same time it would undoubtedly have a tendency to produce an acidosis. At any rate the bird's body becomes weakened and the resistance to disease is lowered, on account of the nutritional condition that is produced by such a diet.

In each case where aspergillosis became an epizootic the birds were confined to small pens that were not well kept and the litter was damp and moldy. They were all given a bran mash ration, consisting of 25% to 30% of tankage or meat meal. None of the birds had much of an opportunity to exercise by scratching, as the litter was very limited in amount. The scratch grain that was fed was also very moldy.

The fungus may be found everywhere on grain and on straw, but it causes no trouble until it finds favorable conditions in the animal's body. Gray (1913:1208) states that "once it has thriven in the animal body it becomes more virulent and then it is easy for it to be transmitted from animal to animal, especially of the same species, as from bird to bird." In the above epizootic the condition of the birds was such that their bodies made favorable conditions for the fungus. The birds were weakened from their high protein ration, with a lack of free range, no green feed and insufficient exercise. *Aspergillus fumigatus* spores found favorable conditions for growth in the birds, and thus their virulence was increased by transmission from one host to another.

Summary

1. An epidemic of aspergillosis was prevalent in the flocks of poultry raisers in the vicinity of Stillwater, Oklahoma, in the spring of 1922.

2. The predisposing causes are a lowered vitality and weakened resistance from some cause or other. In this instance the primary cause was due to the nutritional condition of the birds, in addition to having been fed moldy feed, in closely confined pens.

3. Treatment is of no value after the birds once show symptoms. Prevention lies in allowing free range, plenty of green feed and clean pens and feed.

4. *Aspergillus fumigatus* grows very readily on bread, potato and beer-wort agar.

5. Experiments show that the fungus is not particularly pathogenic in healthy, active birds, but that once it finds suitable conditions for growth its virulence increases.

LITERATURE CITED

Beach, J. R. and Freeborn, S. B.

1922—Common diseases and parasites of poultry in California⟨ Cir. No. 251, Univ. Calif. Agr. Exp. Sta.

Gray, Henry.

1913—Aspergillosis ⟨Hoare's System of Veterinary Medicine, Vol. I., Alex Eger, Chicago.

Mohler, J. R. and Buckley, J. S.

1914—Pulmonary Mycosis of Birds ⟨Circ. 58, U. S. Dept. Agr., Bur. An. Ind.

Moore, V. A.

1916—Pathology and Differential Diagnosis of Infectious Diseases of Animals, 4th ed., p. 593, MacMillan Company, New York.

Ward, A. R. and Gallagher, B. A.

1922—Diseases of Domesticated Birds, p. 333, MacMillan Company, New York.

CLINICAL AND CASE REPORTS

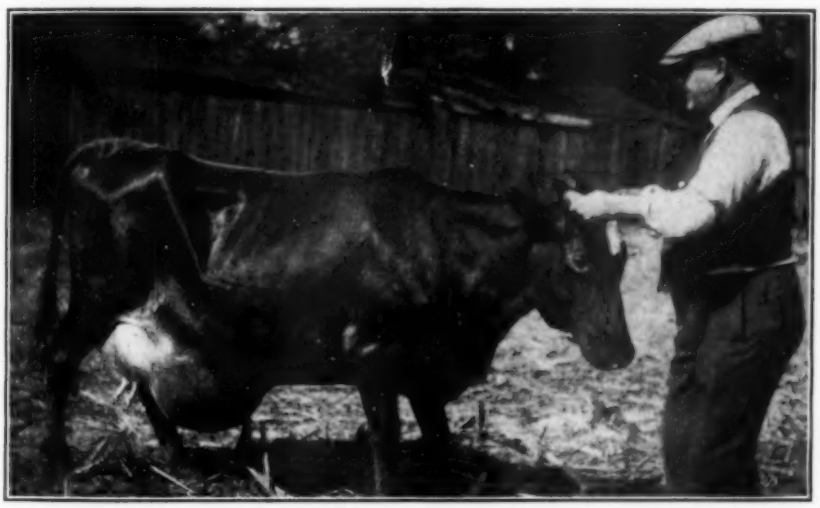
(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

VENTRAL HERNIA AND PERITONITIS

By E. D. KING, JR., *Valdosta, Ga.*

The urgent need of systematic meat inspection in all cities and localities, to protect public health, is strikingly shown in the following case. Such cases as this should be thoroughly explained to the general public.

A cow showed hernia two days before calving, and the owner called the writer to see it. Later Dr. W. C. Stroud and Dr. E. R. Coon were called in consultation and they agreed that the trouble was a ventral hernia. (Dr. Stroud is Assistant State Veterinarian here, and Dr. Coon is a Veterinary Inspector for the Bureau of Animal Industry and was here testing cattle in herds working for admission to the Accredited Herd List.)



VENTRAL HERNIA

Autopsy showed the intestines adhered together by a thick, straw-colored, gelatinous, blood-streaked substance, and the serosa showed plain lesions of peritonitis, both in the protruding mass and in the viscera remaining in the abdominal cavity. Petechiae on pleura and peritoneum were fairly numerous.

A detailed description of the lesions seems unnecessary, but the reader is referred to Edelmann's Meat Hygiene (translated by Mohler and Eichhorn), p. 301, under Judgment: "As the toxalbumens of septicemia bacteria are not positively destroyed by heat, the use of meat, even in cooked condition, is not permitted."

The diagnosis was "peritonitis" with a very probable complication of septicemia, and being unable to obtain consultation at the time of slaughter, the carcass was condemned without opportunity to have other opinion than mine.

This seems to be of special interest to the profession, in that it presents a case, seemingly fit for food to the untrained person, but very probably dangerous to the extent of causing death, and unquestionably capable of producing sickness, even in the cooked state. Inquiry revealed the fact that more than thirty days elapsed between the date of the injury and time of slaughter.

Have You Secured One New Member This Year?

MAJOR SURGICAL OPERATION ON A PARROT

By J. Raymond Wells, *Boston, Mass.*

Angell Memorial Animal Hospital

A current periodical recently published an extensive article upon medical and surgical therapeutics applied to parrots. Concerning the surgery it stated that major operations were not feasible. This has not been the experience at the Angell Memorial Animal Hospital in Boston. A great many birds are examined and treated by our staff, and a considerable number of these are parrots. We have performed numerous minor, and a few major, operations upon them, so for the benefit of those small animal practitioners, who are surgically inclined, and for the interest of those who do not know that such radical measures are attempted upon birds, we will report the case of a ten-year-old parrot operated upon for prolapse of the cloaca.

From the history we learned that the condition first appeared one year previous to the time this study was started and that administration of an elixir of iron, quinine, and strychnine had toned up the organ sufficiently to overcome the trouble. The recrudescence was first noticed two months prior to our examination. Though the cloaca was completely everted, the bird maintained a good appetite.

First, we endeavored to treat the condition medically. After replacement, a purse-string suture was inserted and styptic suppositories of tannic acid were used several times a day. In addition, an elixir of iron, quinine and strychnine was again tried, being given in twenty-minim doses three times a day. When ten days had elapsed, the suture was removed, but by the following morning the procidence had recurred. Since drugs, then, were found ineffectual, surgery was resorted to.

The patient was restrained by means of a heavy towel. An ether cone was placed entirely over its head, and in a short time (perhaps two minutes) anaesthesia was established and relaxation complete. Very little ether was required to maintain this state. The feathers were plucked from the right and left lumbar and iliac regions of the abdomen, the areas washed, then bathed with ether to remove all quill oil, and antisepticized with a diluted solution of iodine. Two two-inch incisions through skin, musculature and peritoneum were made diagonally from the costo-chondral junction of the last ribs toward the corresponding sides of the vent. The prolapse was reduced and with catgut sutures two areas of the cloacal peritoneum were bound to the parietal peritoneum.

Interrupted sutures of catgut were placed in the external incisions, a dressing of antiseptic drying powder was applied, and about fifteen turns of bandage were wrapped around the parrot's body. These layers were sealed together and stiffened with sodium silicate, and six thicknesses of heavy paper were applied in a shield-like fashion over the entire abdominal expanse of the bandage. This seemingly great amount of material was used in order that the wounds would have time to heal before the bird could pick off the covering. The means was effective, for every knot had fallen away before the parrot removed the bandage.

By suturing the cloaca to the belly wall at two places, in a transverse line, a comparatively long transverse adhesion was produced. This union made further prolapse impossible. Catgut sutures were used in the incisions because by previous experience the operator had learned that the struggle attending the removal of silk sutures was sufficient to break down the peritoneal adhesion. Administration of tincture of nux vomica, 2 minims, in elixir of lactated pepsin, 20 minims, three times a day, soon restored a normal appetite. The diet consisted of apple meat, orange pulp, and bread in milk. At the end of three weeks small

amounts of seed were offered, and at six weeks the normal ration was being fed.

This operation, while of no economic value, is interesting, since it shows that good results can be obtained in major surgery upon parrots.

We Want 5000 Members This Year.

HEMORRHAGIC SEPTICEMIA IN MULES[1]

By H. R. CHURCH, *Harrisburg, Pa., and*
E. L. STUBBS, *Philadelphia, Pa.*

During the latter part of December, 1922, there occurred an outbreak of hemorrhagic septicemia in mules which is considered of sufficient interest to report.

About eighteen months previously, the owner had purchased twenty head of mules, ranging in age from yearlings to three-year-olds. These mules were in pasture during the summer with the exception of one or two of the oldest ones, which were used on the owner's farm. The last week in October they were placed in a barn with access to the barnyard and a portion of the basement barn. After being taken up from pasture they were fed corn fodder and ear corn, until the first of December, when in addition they were given alfalfa and timothy hay. On December 6th the owner hitched one of the mules with an aged horse and drove about two miles. Nothing was noticed wrong with this team when placed in the stable and they ate their evening meal. The next morning these two animals were found dead. They were sent to the fertilizer works.

On the morning of the 9th the owner found another mule sick and immediately called a veterinarian who diagnosed the case as inflammation of the bowels. This mule died that evening. On December 12th two more mules were taken sick and another veterinarian was called, who diagnosed the trouble as influenza. These two mules lived less than twenty-four hours. On December 17th two more mules were taken sick. The Bureau of Animal Industry was called on the 18th and a visit was made on that day at 2 p.m. when it was found that one mule had died and another was sick. Both sick mules had high temperatures, one being

[1]Contribution from the Bureau of Animal Industry, Pennsylvania Department of Agriculture. New Series No. 14.

105.6° F. and the other 106.2° F. Visible mucous membranes were injected, pulse very weak, almost imperceptible. The mules walked with a staggering gait and would not remain in a standing position very long at a time. However, the tendency to lie down did not seem to be caused by pain but rather by weakness. The ears lopped and the bowels were relaxed.

Autopsy of the mule which had died a few hours previously showed extensive hemorrhagic areas throughout the entire muscular system. The pharynx, larynx, trachea, pleura and lungs showed rather profuse petechiae. There were no diffuse hemorrhagic areas in the lung tissue. The muscular walls of the intestines and the peritoneum showed extensive hemorrhagic areas, as did the liver, stomach, spleen, kidneys and bladder. There was quite a profuse gelatinous exudate around the liver and spleen and also in the muscles. A diagnosis of hemorrhagic septicemia was made. The remaining mules were vaccinated.

Specimens were submitted to the laboratory consisting of the heart, a portion of the liver and of the spleen. The heart showed hemorrhages on both the epicardium and endocardium, varying from petechiae to suffusions. These hemorrhages were bright red in color. The liver was friable, the spleen was slightly swollen and on cut section was very dark red in color. Smears of the heart-blood and spleen showed large numbers of bacilli with bipolar staining. An emulsion was plated on blood agar and 2 cc injected subcutaneously into two rabbits. In twenty-four hours, on the plates, there was a pure culture of a bacillus characteristic of the hemorrhagic septicemia group. The rabbits failed to die. We have been unable to get this culture to grow on plain agar but it grows well in bouillon and on blood agar.

Hardenbergh and Boerner, writing on hemorrhagic septicemia in mules, in the JOURNAL OF AMERICAN VETERINARY MEDICAL ASSOCIATION (Sept. 1917, p. 817), also refer to the difficulty of getting bipolar organisms to grow when isolated from mules and of their failure to kill rabbits on inoculation. This culture was again injected into rabbits, guinea pigs and white mice but was non-pathogenic.

Does Your Wife Know About The Women's Auxiliary?

REVIEWS

SPEZIELLE PATHOLOGISCHE ANATOMIE DER HAUSTIERE. (Special Pathological Anatomy of the Domestic Animals). Ernst Joest, D. M. V., Ph. D., Professor of Pathological Anatomy in the Veterinary High School of Dresden. Vol. III, 1st half. 410 pages, 188 illustrations. Published by Richard Schoetz, Berlin, 1923.

This work represents the third volume, first half, with the joint authorship of Acherknecht and Frei of Zurich, Henschen of Stockholm, Hieronymi, Nieberle, Noller, Schlegel, Trautmann, Ziegler, Zumpe and Joest, Editor-in-Chief, of Germany. The subject matter is confined to a discussion of the glands of internal secretion, male sex organs, and urinary apparatus.

The chapter on the Endocrine System (XII) is written by Trautmann, of Dresden, who gives a description of the endocrine system. The paragraph topics are made prominent, as are some of the sentence subjects, by heavy type. The literature consulted is appended at the end of each article. The discussion is arranged under macroscopical, developmental and microscopical divisions: first, dealing with normal anatomy; second, with the physiology and pathologic physiology; and third, with structural pathology. The chapter treats with the pathologic conditions as found in the thyroid, parathyroid, adrenal, pituitary, pineal and thymus glands. The discussion consumes 129 pages. The subjects are treated thoroughly and are fairly well illustrated.

Chapter XIII, written by Schlegel, concerns the pathology of the male reproductive organs. The same schema is followed in its development. The subject matter is thorough, but in many instances illustrations are scanty, especially microscopical reproductions supplementing the macroscpoic, which would lend a finish, especially desired by students of the subject. The chapter includes 60 pages.

Chapter XIV, by Henschen, of Stockholm, includes a complete discussion of the pathology of the urinary organs. The chapter concludes the volume and consumes 219 pages. Illustrations are ample and excellent, the subject matter very well composed and well classified. The work presents the modern views of pathologists, concerning especially the pathology and classification of nephritis. The development of the subject is similar to that described for the Endocrine System.

As with the volumes which preceded this one, the discussions are not limited to any one of the domestic animals. Consideration of the pathology of the domesticated forms is dealt with in a comparative way.

This volume is a worthy supplement to the two volumes which came before. There is nothing in the English language with which to compare it and probably no book its equal has ever been presented to the profession, in an accessible language. The book is most highly commended to all interested in the development of comparative pathology.

D. C. B.

TUBERCLE BACILLUS INFECTION AND TUBERCULOSIS IN MAN AND ANIMALS. Albert Calmette, Associate Director, Pasteur Institute, Paris. Authorized translation by Willard B. Soper, M. D. and George H. Smith, Ph. D. Second edition. 714 pages with 31 figures in the text and 25 full-page colored plates. Indexed. Published by Williams and Wilkins Company, Baltimore, 1923. Price $8.00, cloth.

Undoubtedly the best work on the subject of tuberculosis that has ever been written. It is complete, without being tedious, even to the slightest degree. The author has sifted, from the voluminous literature on the subject of tuberculosis, all that is sound and serviceable in the campaign against the most terrible of human infectious diseases, and has intentionally omitted all discussion of doctrines or of theories.

It is refreshing to read in the preface that the author addresses his book to the veterinarian, as well as to the physician and the laboratory worker. The veterinarian, as a comparative pathologist, will find every chapter teeming with valuable information. Some chapters are devoted entirely to a discussion of tuberculosis in animals, both wild and domestic.

The book is divided into four parts: (1) The Tubercle Bacillus and Processes of Infection by It, Chapters I to XIX; (2) Experimental Tuberculosis and Tubercle Bacillus Infection in Animals, Chapters XX to XXIX; (3) Processes of Defense and the Diagnosis of Tuberculous Infection, Chapters XXX to XXXVII; (4) Natural Immunity and Processes of Immunization Against Tuberculous Infection, Chapters XXXVIII to XLIV.

Parts 2 and 3 undoubtedly offer the most interesting material for the veterinarian. Among the subjects discussed are:—Dif-

ferent modes of inoculation and of experimental infection. Differential characters of the bovine and human types of tubercle bacillus. The pathological anatomy of bovine tuberculosis. Frequency and geographical distribution of the disease in cattle. The role of bovine tuberculosis in the infection of man. Specific diagnostic reactions. Mechanism of tuberculin reactions. Variations in virulence of the tubercle bacillus. Natural immunity. Protective vaccination. Chemotherapy of tuberculosis.

In the chapter on chemotherapy the author very frankly concludes that it must be recognized, that up to the present time, despite the great amount of effort that has been put forth, in the hope of finding a chemical agent capable of arresting the development of tuberculosis in experiment animals, those attempts have been in vain. The author is not discouraged, however, and points out the necessity for continuing these studies. He warns against the uselessness of misdirected efforts and states that methodically conducted experimentation upon animals sensitive to tuberculosis will enable us to explore with profit the immense perspectives offered by chemotherapy.

One feature of the book is worthy of special mention—the colored plates. These are magnificent examples of the art. No more faithful reproduction of the natural colors is ever seen, especially in the plates depicting lesions in the various viscera, and the cutaneous tuberculin reactions. Those showing the cultivation of tubercle bacilli on various artificial media are unusually good.

In this book are com bined the efforts of a brilliant scientist, a talented illustrator, careful translators and skilled printers. They have every reason to be proud of what they have accomplished.

ABSTRACTS

INVESTIGATIONS INTO BRAXY. S. H. Gaiger. Jour. Comp. Path. and Thera., xxxv, (1922), 191; 235.

The article deals principally with the etiology, pathology and methods of prevention of a disease of sheep in Scotland. The disease is seasonal and principally attacks sheep from October to January. The writer concludes that certain circumstances cause injury to the mucous membrane of the fourth stomach, enabling an anaerobic bacillus to penetrate the mucosa and grow in the deeper structures. The toxin formed lowers the host's

resistance and enables the organism to attack other parts of the alimentary tract and finally reach the peritoneal cavity and enter the blood stream. The bacterial invasion and toxemia soon proves fatal. Sheep succumbed when injected subcutaneously with small quantities of culture, but the same when fed failed to cause appreciable damage.

The writer compared the organism isolated from braxy with cultures obtained from a similar disease in Continental Europe known as bradsot, also with *Vibrion septique*, and found them identical. He was able to distinguish the braxy-bradsot-*Vibrion septique* group from *B. chauvis* and *B. oedematiens*.

Methods of prevention are discussed. Jensen developed a sero-vaccine against bradsot which proved effective as a preventive of braxy in Gaiger's observations during 1921-22. Trials were made with a germ-free filtrate of culture. Two subcutaneous injections of 5 cc of filtrate gave encouraging results as a preventive.

F. S. J.

JOINT-ILL IN FOALS. J. M'Fadyean and A. L. Sheather. Jour. Comp. Path. and Thera., xxxvi, (1923), 22.

The vaccine was prepared from six strains of streptococci, four isolated from involved joints, one from an umbilicus, and one from an abscess in the brain. Each strain was grown in dextrose-serum broth. After heating at 56°C., phenol was added in the proportion of 0.5 percent. The growth was permitted to sediment. The sediments of all cultures were mixed and standardized by dilution.

The plan was to administer the vaccine to mares a month before parturition and a further treatment 2 weeks later. The foals were to be injected as soon after birth as possible, a second dose to be given 2 weeks later.

In all, a total of 1007 foals were treated. Of these 64, or 6.3 percent, developed joint-ill, and 38, or 3.7 percent, died.

The writers compared their results with the mortality records of two insurance companies. The statistical evidence obtained from these records indicated an average annual mortality of 2.5 percent for one company, and for the other an average of 2.8 percent. On this comparison and further evidence M'Fadyean and Sheather conclude:

1. The mortality from joint-ill, and probably also the inci-

dence of the disease, varies from year to year. In this country (Great Britain) it appears to average 3 percent.

2. The normal case mortality appears to be about 55 percent.

3. Treatment of either mares or foals, or both, with anti-streptococcus serum, or vaccine of killed streptococci, has no effect either in preventing joint-ill or in curing it, and it ought therefore to be abandoned.

4. Prophylactic measures should be based on the view: (1) that the disease is contracted by the foal after birth; (2) that the streptococci and other organisms concerned in its production are widely distributed facultative parasites, frequently present in soil and dirt; and (3) that the umbilical cord is the usual starting point of the disease.

F. S. J.

Arsenical Compounds in the Treatment of Blackhead in Turkeys. Ernest Edward Tyzzer. Jour. Exp. Med., xxxvii, (1923), pp. 851-873.

In previous investigations the author was able to show that none of the following were of value against blackhead: *Chaparro amargose*, tartar emetic, quinine hydrochloride, emetine hydrochloride and ipecac.

The present study had to do with the effects of neoarsphenamine, aresenious acid, atoxyl, and tryparsamide. The first three were found unfavorable, either on account of their toxicity or failure to be of utility against blackhead, but tryparsamide gave good results. In Tyzzer's experiments one dose of from 4 to 22 cc of a 25% solution (or up to 1 gm. per kilo of body-weight) was injected, the usual results being improvement or cure.

In order to effect a cure, however, it is necessary to institute treatment before the disease has become so thoroughly established.

Tyzzer concludes: "Tryparsamide has the most pronounced curative action on blackhead infection of any of the drugs thus far tested. Either intravenous or subcutaneous injection of appropriate doses of this drug at the first appearance of symptoms should serve to cure the majority of cases of blackhead."

F. B.

AMERICAN VETERINARY MEDICAL ASSOCIATION

Proceedings of Fifty-ninth Annual Meeting, St. Louis, Mo. August 28 to September 1, 1922

(*Concluded*)

SECTION ON GENERAL PRACTICE

TUESDAY MORNING, AUGUST 29, 1922

The first session of the Section on General Practice convened at 9:45 a. m., Dr. W. E. Muldoon, of Manhattan, Kansas, presiding.

CHAIRMAN MULDOON: The first thing on the program is the Chairman's address. I have no address to make. The only thing I want to say is that this is supposed to be a practitioners' meeting and we hope that you will discuss these papers thoroughly.

The first paper on the program is, "The Handling of Fistula of the Withers in Practice," by Dr. B. W. Conrad, of Sabetha, Kansas.

Dr. Conrad presented his prepared manuscript. (Paper published in JOURNAL, October, 1922, pp. 37-38. Discussion published in JOURNAL, November, 1922, pp. 207-208.)

CHAIRMAN MULDOON: Any further discussion? If there is no further discussion, the next paper on the program is to be a paper by Dr. Boyd on "Pathology of Sterility." As he is unable to get a lantern right now we will ask Dr. Frick to read his paper on "The Acriflavine and Proflavine Preparations in Bovine Practice."

Dr. E. J. Frick, of Manhattan, Kansas, read his prepared manuscript. (Published in JOURNAL, October, 1922, pp. 34-36.)

CHAIRMAN MULDOON: You have all heard Dr. Frick's paper. Is there any discussion? If not, we have a lantern now, that I think will work, and I believe we will have Dr. Boyd's paper at this time. (Dr. Boyd then delivered an illustrated lecture on "The Pathology of Sterility in Cattle," which is published in this issue of the JOURNAL.)

. . . The meeting adjourned at 12:15 p. m.

FRIDAY MORNING, SEPTEMBER 1, 1922

The meeting convened at 8:45 a. m., Dr. H. E. Kingman presiding.

CHAIRMAN KINGMAN: It is rather embarrassing to start the

program with such a small attendance, but we will get that much more out of it.

The first paper on the program this morning will be by Dr. J. G. Ferneyhough, of Richmond, Virginia, on "Why the Practicing Veterinarians Should be Recognized and Appreciated by the State and Federal Officials." (Dr. Ferneyhough read his paper. Published in the JOURNAL, January, 1923, pp. 481-483.)

CHAIRMAN KINGMAN: The next order of business, gentlemen, according to this program, is the election of officers for this section. Is there any business that should come up before we take up the matter of election of officers?

DR. FERGUSON: Mr. Chairman, it has always been our custom in this section to nominate and elect the present Secretary of this section as President. Therefore, I take pleasure in placing the name of Dr. Kingman in nomination for that office.

CHAIRMAN KINGMAN: Any other nominations?

DR. A. TRICKETT (Kansas City, Mo.): I move that the nominations be closed.

The motion was seconded by Dr. Ferguson and carried.

CHAIRMAN KINGMAN: Nominations are now in order for Secretary of the section.

DR. CONRAD: I would like to place in nomination, and it gives me great pleasure to mention the name of Dr. Ferguson, for Secretary of this section.

DR. FERGUSON: I appreciate the honor alright, but I have served on this section a great many times and I would not like to be up too often. I do, however, take pleasure in nominating Dr Harry Caldwell, of Wheaton, Ill. Dr. Caldwell is a practioner of several years' experience; he is one of the coming practitioners of the country, and I can assure you he will make a first-class Secretary of this section in every way.

CHAIRMAN KINGMAN: I think Dr. Ferguson is sincere in his remarks, and if it is his choice, Dr. Conrad, would you withdraw your nomination?

DR. CONRAD: Yes.

DR. TRICKETT: Mr. Chairman, I move you that the rules be suspended and Dr. Caldwell be given the unanimous vote of this body. The motion was seconded and carried.

CHAIRMAN KINGMAN: I believe that this concludes our program for this morning. Thank you.

The meeting adjourned at 9:20 a. m.

ADJOURNMENT.

OTHER MEETINGS

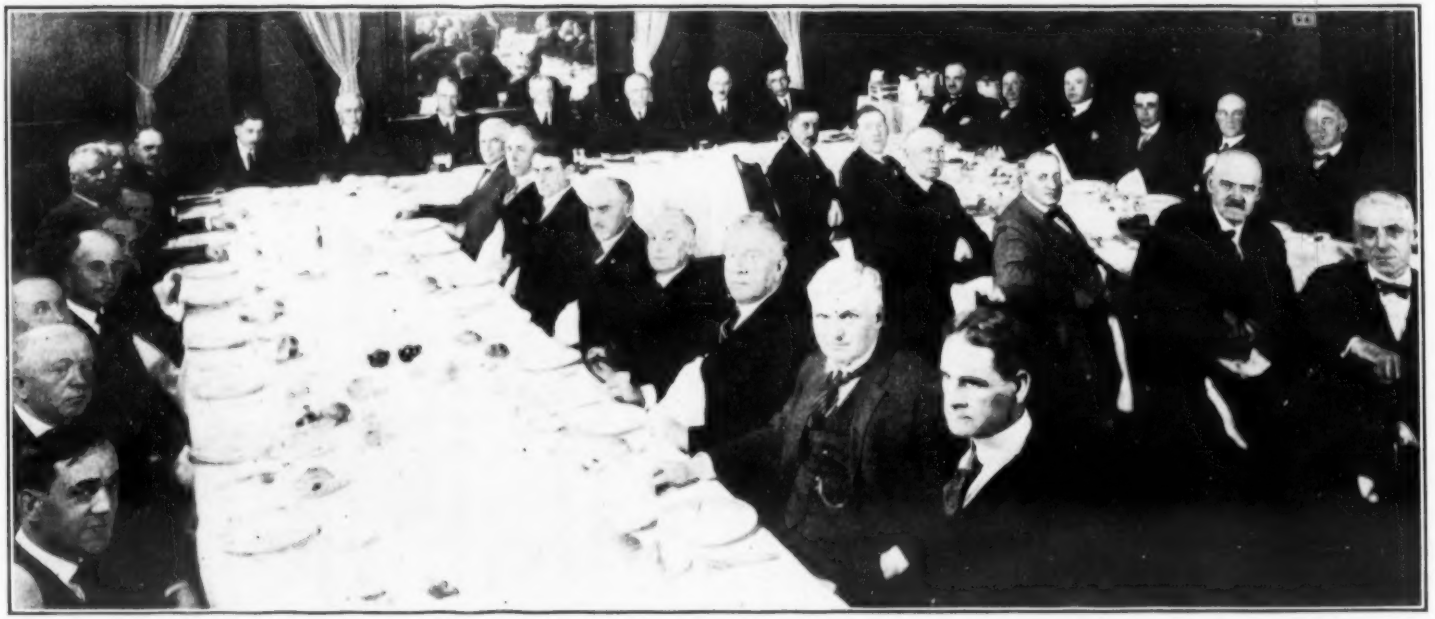
MASSACHUSETTS VETERINARY MEDICAL ASSOCIATION

The thirty-ninth annual meeting of the Massachusetts Veterinary Medical Association was held at Young's Hotel, Boston, April 25, 1923, forty-three members being present.

The meeting was called to order by President Gilbert at 6:15 p. m. The minutes of the March meeting were read. President Gilbert reported the appointment of the committee to act with Dr. Clark, relative to the advisability or the establishment of a veterinary school at Amherst, Mass. Drs. Lentz, Playdon, Cleaves and C. H. Paquin were appointed. Dr. Mulverhill, for the Committee on the Writing of Prescriptions for Alcoholic Liquors, reported that the matter was being given the attention of the Committee and a report would be made later. The Secretary-Treasurer then presented his financial report for the year 1922-23. The Secretary also made a report relative to membership.

The following officers were elected for the ensuing year: President, Dr. W. L. Thayer; First Vice-President, Dr. William Buckley; Second Vice-President, Dr. H. N. Eames; Secretary-Treasurer, Dr. C. H. Playdon. President Gilbert in a few well chosen remarks turned the chair over to the incoming President, Dr. W. L. Thayer. Dr. Gilbert moved that a vote of thanks be extended to Dr. H. W. Peirce, for his faithful services as Secretary during the past five years, and that the report be accepted, which motion was unanimously carried.

Dr. Babson, under new business, called the attention of the Association to the luncheon and dinner to be held at Springfield, on April 26th, at which the following associations were to be present: Massachusetts Association of Boards of Health, Massachusetts Medical Association, Massachusetts Tuberculosis League, Massachusetts Association of District Nurses, etc. Dr. Babson referred to the fact that the Massachusetts Veterinary Medical Association should be represented at this meeting. It was moved and passed that a committee of three be appointed to bring to the attention of this conference the fact that the Massachusetts Veterinary Medical Association was overlooked by no invitation having been extended. Dr. H. W. Peirce moved



Banquet, Annual Meeting Massachusetts State Veterinary Medical Association, Young's Hotel, Boston, Mass., April 25, 1923.

that the Secretary be instructed to have the new Constitution and by-laws printed, but that the expense be limited to thirty dollars.

Motion made by Dr. T. E. Maloney that the by-laws be suspended and that the regular May meeting be held at Amherst, on the third Wednesday of the month.

Dr. L. A. Paquin moved that a vote of thanks be extended to Dr. L. H. Howard, Director of Animal Industry, for the use of his office for the March meeting. Dr. Howard accepted the vote of thanks and extended an invitation to the Association to meet at his office at any time it was deemed advisable by the Association.

Dr. H. W. Peirce, as Custodian, reported the condition of the fund remaining from the amount collected for the Bovine Tuberculosis Conference of 1921. This report called for considerable discussion and numerous motions were offered, but no definite action was taken. The meeting adjourned, at 7:15, to the Presidential Chamber, where a banquet provided by the Entertainment Committee was enjoyed by all. During the banquet music was furnished by Dr. and Miss Reynolds.

After the banquet a very interesting and instructive talk was given by Professor Allyn, on the subject of "Vitamins as Applied to Animal Health." The lecture was illustrated by blackboard drawings and specimens brought by the Professor. That the subject proved to be interesting was shown by the number of questions which were asked of Professor Allyn at the close of his talk.

Mr. H. C. Robinson, Passenger Traffic Representative of the Grand Trunk Railway, gave a brief talk regarding the rates from different points in Massachusetts, to Montreal, for the August Convention of the American Veterinary Medical Association.

Dr. H. Preston Hoskins, Secretary-Editor of the American Veterinary Medical Association, gave a pleasant and interesting talk relative to A. V. M. A. matters. He called attention to the necessity of all Massachusetts veterinarians becoming members of the National Association.

Meeting adjourned at 11:00 p. m.

C. H. PLAYDON, *Secretary-Treasurer.*

We Want 5000 Members This Year.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The regular monthly meeting of the Veterinary Medical Association of New York City was called to order by the President, Dr. J. Elliott Crawford, in the Academy of Medicine, 17 West 43rd St., on Wednesday evening, May 2nd, 1923 at 8:45 p. m.

Dr. H. Preston Hoskins, Secretary-Editor of the American Veterinary Medical Association was present and gave a very interesting talk on the future of the Association. He related many of the trials and amusing features of the position he occupies. A number of questions were asked by members of the Association and all were ably answered by Dr. Hoskins. It was the opinion of those present that the A. V. M. A. has been fortunate in selecting Dr. Hoskins as its Secretary-Editor, and that the JOURNAL has a bright future.

Drs. Chase, Gannett, Way, Ackerman and others joined in the discussions. Dr. T. E. Munce, of Harrisburg, Pa., was present and spoke very favorably of the future of the A. V. M. A.

Dr. Robert S. MacKeller read a paper on "Reminiscenses of Practice in Greenwich Village." Dr. MacKellar has been located in the "Village" for a number of years and recalled the many stables in the alleys, with the owner living in the house in front. In many instances the wagons were parked in the street and later in the form along the water front. The veterinarian was given a key to the stable and it was necessary to maintain a key-board in his office, to be able to enter the various stables while the owners were out trucking.

Dr. R. S. MacKellar reported and exhibited several specimens of intestinal calculi. The one, during the treatment of a horse supposedly suffering colic, was removed from the rectum and on cross-section showed a nucleus consisting of a smaller calculus. The other one was passed by the horse while being treated and showed a nucleus of a piece of wire. He also reported and exhibited a urinary calculus he had found in the end of the penis of a horse. These specimens were rather rare and most interesting. The subject was duscussed by Drs. Geo. Berns, E. B. Ackerman, Theo. Keller and others.

It was regularly moved and seconded that the President appoint a committee of three, consisting of Drs. W. Reid Blair, Ackerman and Rohrer, to solicit funds for a donation to the building fund of the Academy of Medicine.

On motion a rising vote of thanks was extended Drs. Hoskins and MacKellar for their entertainment.

No further business appearing, the meeting adjourned.

C. G. ROHRER, *Secretary*

Have You Secured One New Member This Year?

FOURTH ANNUAL NEW ENGLAND CONFERFNCE

The fourth annual New England Conference on Live Stock Diseases, including Bovine Tuberculosis Control and Eradication, was held in Representatives' Hall, State House, Concord, N. H. on June 12-13, 1923, under the auspices of:—

United States Bureau of Animal Industry,
New Hampshire Veterinary Medical Association,
New Hampshire State Department of Agriculture,
New England Live Stock Sanitary Officials with the
New England Departments of Agriculture and
Veterinary Associations Co-operating.

The Conference was called to order at 9 a.m. sharp, by Dr. R. W. Smith, President of the New Hampshire Veterinary Medical Association, who introduced Hon. A. L. Felker, Commissioner of Agriculture, Concord, N. H., who gave the address of welcome.

Dr. John R. Mohler, Chief of the Bureau of Animal Industry, Washington, D. C., followed Commissioner Felker's address of welcome with an address in which he outlined the object of the conference. Dr. Mohler was followed by live stock officials from the New England States, New York, New Jersey and Pennsylvania, who reported upon the progress of tuberculosis eradication in their respective states. The following speakers were heard:

Dr. J. B. Reidy, Representing the Chief of the Division of Animal Industry, Augusta, Me.

Hon. E. S. Brigham, Commissioner of Agriculture, Montpelier, Vt.

Dr. Lester H. Howard, Director, Division Animal Industry, Boston, Mass.

Hon. J. M. Whittlesey, Commissioner of Domestic Animals, Hartford, Conn.

Hon. D. W. McLaury, Director, Division Animal Industry, Albany, N.Y.

Dr. P. E. Quinn, Representing the State Veterinarian, Harrisburg, Pa.

The afternoon session was opened by Hon. Enos K. Sawyer, Secretary of State, in the absence of His Excellency, Fred H. Brown, Governor of New Hampshire. Then the following speakers addressed the meeting:

Dr. Wm. H. Donnelly, President of American Association of Certified Milk Commissions, "Raw Milk *versus* Pasteurized Milk."

Mr. H. M. Currier, Pelham, N. H.

Prof. H. R. Smith, Live Stock Commissioner, Chicago, Ill.

Mr. Geo. M. Putnam, President, New Hampshire Farm Bureau Federation, Contoocook, N. H.

Prof. J. C. McNutt, University of New Hampshire, Durham, N. H.

Hon. H. N. Sawyer, Master New Hampshire State Grange, Atkinson, N. H.

Hon. A. J. Glover, *Hoard's Dairyman*, Fort Atkinson, Wis.

The evening program consisted of moving pictures and the following addresses:

Dr. J. A. Kiernan, Chief, Tuberculosis Eradication Division, Washington, D. C.

"A Farmerette's Viewpoint of Tuberculosis Eradication," by Miss Elizabeth Farley, Amherst, Mass.

The program for Wednesday was as follows:

"Progress of Co-operative Tuberculosis Eradication, as a National Program," by Drs. A. E. Wight, Asst. Chief, Tuberculosis Eradication Division, Washington, D. C.; J. B. Reidy, Inspector-in-Charge, Augusta, Me.; R. W. Smith, State Veterinarian, Concord, N. H.; and G. E. Corwin, Deputy Commissioner Domestic Animals, Hartford, Conn.

"Salvaging Reactors," by Drs. J. E. Gibson, Indianapolis, Ind.; H. B. Leonard, Inspector-in-Charge, Albany, N. Y.; R. L. Smith, Inspector in Charge, Hartford, Conn.

"Twenty Years Experience in Wisconsin," by Hon. C. P. Norgard.

"Tuberculosis Eradication Work in Canada," by Dr. Orlan Hall, Ottawa, Ont.

"The Veterinary Practitioner, and His Part in Co-operative Tuberculosis Eradication," by Drs. A. T. Gilyard, Waterbury, Conn.; Fay F. Russell, Concord, N. H.; and W. L. Thayer, Worcester, Mass.

"Area Tuberculosis Eradication Work," by Dr. R. C. Julien, State Veterinarian, Indianapolis, Ind.

Discussions on Tuberculosis, by Drs. Harrie W. Peirce, Massachusetts Division of Animal Industry; P. E. Quinn, Inspector-in-Charge, Harrisburg, Pa.; L. H. Adams, Montpelier, Vt.; W. G. Middleton, Inspector-in-Charge, Trenton, N. J.; and A. L. Edmunds, Franklin, N. H.

WEDNESDAY AFTERNOON

"The Work of the Experiment Station on Tuberculosis Eradication," by Dr. E. C. Schroeder, Superintendent, Experiment Station, Washington, D. C.

"Bovine Tuberculosis Eradication, from a Public Health Viewpoint," by Dr. Wm. M. Stockwell, Superintendent, State Tuberculosis Sanatorium, Hartford, Conn.

"The Importance of Clean Milk in Public Schools," by Dr. Thomas F. Kenney, Director, Board of Health, Worcester, Mass.

"Tuberculosis in the Home," by Dr. Kerr, Manchester, N. H.

"The High Spots of the Conference," by Dr. John R. Mohler, Washington, D. C.

Wednesday evening a banquet was held at the Eagle Hotel, followed by a dancing party, at the Parish House.

The committee appointed to entertain the visiting ladies included: Mrs. R. W. Smith, Laconia, N. H., Mrs. Fay F. Russell, Concord, N. H., Mrs. H. M. Lewis, Nashua, N. H., Mrs. H. S. Perley, Hanover, N. H., Mrs. A. L. Edmunds, Franklin, N. H. and Mrs. Guy E. Chesley, Rochester, N. H.

Tuesday, a trip to the Weirs, lunch at the Laconia Country Club, a steamer ride on Lake Winnipesaukee, and back home in time for the evening program. On Wednesday the ladies motored through the White Mountains, and to places of interest, in and about Concord.

Besides the speakers on the program, many prominent men of the profession were present, including Drs. A. E. Moore, Montreal, Que.; T. H. S. Lowrey and E. A. Watson of Ottawa, Ont.; J. G. Wills, Albany, N. Y.; John F. DeVine, Goshen, N. Y.; Otto Faust, Poughkeepsie, N. Y.; Benj. D. Pierce, Springfield, Mass.; M. E. Maddocks, Augusta, Me.; L. E. Maddocks, Gardner, Me.; J. S. Henderson, Memphis, Tenn., and many others.

A great deal of credit is due Dr. E. A. Crossman, of Boston, for his active part in making the Conference a decided success.

FAY F. RUSSELL, *Res. Sec. (A.V.M.A.) for N.H.*

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION

The fourteenth annual meeting of the Central New York Veterinary Medical Association was held at Syracuse, N. Y., June 14, 1923. The meeting was opened at 9:30 a. m. with a clinic at the Infirmary of Dr. J. A. Pendergast.

The following cases were operated upon:

Case 1. Fistula of the maxillary sinus of dog.
Surgeons: Drs. Hollingworth and Currie.

Case 2. Fistula of the withers. Chestnut mare.
Surgeons: Drs. Stack, Long and Sullivan.

Case 3. Trimming ears. Bull terrier.
Surgeon: Dr. Currie.

Case 4. Abscess on abdomen. Brown mare. Removed a piece of wire.
Surgeons: Drs. Stack and Long.

Case 5. Spaying. Cat.
Surgeon: Dr. J. A. Pendergast.

Case 6. Quittor. Brown mare.
Surgeons: Drs. Currie and Long.

Case 7. Roarer. Sorrel gelding.
Surgeons: Drs. Danforth and Long.

This case ended another of our very interesting clinics. At 2 p. m. we adjourned to the St. Cloud Hotel, for the regular annual business meeting. Dr. J. K. Bosshart, President, took the chair and called the meeting to order.

First in order were the annual reports of the officers, covering a period of two years, as we had skipped one annual meeting, on account of the 1922 State Association meeting, held in Syracuse. The reports of the officers were accepted and placed on file.

Roll-call showed the following members present: Drs. D. A. Boardman, F. N. Burk, L. P. Crow, G. W. Derrick, E. E. Dooling, W. G. Hollingworth, W. M. Long, L. G. Moore, J. C. Stevens, W. M. Sullivan, A. J. Tuxill, J. K. Bosshart, E. E. Cole, J. M. Currie, A. L. Danforth, R. C. Hartman, J. B. Knapp, Frank Morrow, J. A. Pendergast, J. H. Stack, W. B. Switzer. Guest: Dr. Joseph Turner, Lyons, N. Y.

The election of officers resulted as follows: Dr. A. L. Danforth, President; Dr. J. H. Stack, Vice-President; Dr. W. B. Switzer, Secretary-Treasurer.

It was voted that a committee be appointed by the President,

to retire at once and bring in some resolution in regard to a suggestion made by Dr. Danforth, that this Association have the power to hold the semi-annual meeting in some other place than Syracuse, at the option of the Association, and by a vote taken at the annual meeting preceding each semi-annual meeting.

The President appointed the following committee: Drs. A. J. Tuxhill, E. E. Dooling, J. A. Pendergast and J. M. Currie. After due consideration they brought in such a resolution, recommending that this Association have the power, by a majority vote, at any annual meeting, to hold the following semi-annual meeting at some place other than Syracuse.

A vote was taken and the report of the committee was accepted. The Secretary was instructed to send out notices prior to the November meeting, to all members, informing them that said resolution would be voted upon at the meeting in November 1923, and if carried, the by-laws will stand amended to that effect.

Dr. A. L. Danforth gave a very interesting paper on "Business Principles as Applied to the Veterinary Profession." Dr. W. G. Hollingworth followed with a talk on "Success," and illustrated his talk with a number of fine charts, showing that he had spent a large amount of work on the same.

Dr. Currie gave a very instructive paper entitled "Odds and Ends," consisting of case reports. This was followed by case reports by Dr. Boardman. These, with the discussions that followed, made a very interesting and instructive meeting.

Drs. D. H. Udall, J. B. Knapp and J. C. Stevens were appointed on the Red Cross Committee.

Before adjourning Dr. Tuxill made a motion, which was duly seconded, that each officer elected at any annual meeting serve to the close of the following meeting, instead of being seated at the time of election. This motion was unanimously carried.

Thus closed one of our very best meetings and adjournment was taken.

W. B. SWITZER, *Secretary.*

Does Your Wife Know About The Women's Auxiliary?

TEXAS STATE VETERINARY MEDICAL ASSOCIATION

A very successful, two-day meeting was held at Dallas, June 20-21, 1923. About 125 graduate veterinarians and their wives, as well as a number of visitors, were in attendance.

The session opened at the Jefferson Hotel, with an address of welcome by County Attorney J. J. Collins, and was responded to by Dr. N. F. Williams, of Dallas. The President's address was then delivered by Dr. P. P. Starr, of Gainesville, in which he reviewed the work of the Association during the past year. The balance of the forenoon was given over to executive and business sessions.

The following officers were elected: President, Dr. A. E. Flowers, of Dallas; First Vice-President, Dr. H. L. Blackburn, of Fort Worth; Second Vice-President, Dr. W. R. Sanderson, of Brownwood; Secretary-Treasurer, Dr. J. W. Patton, of Dallas.

Fifteen graduate veterinarians were elected to membership.

The Association voted to hold a mid-winter, as well as an annual meeting, and the invitation of Brownwood was accepted for the former, while the next annual meeting will be held at San Antonio, in June.

The afternoon of Wednesday was given over to the reading and discussion of the following papers: Dr. Margaret Owen, of the Terrell Laboratories, at Fort Worth, read and discussed a very instructive paper on "Rabies." Mr. Boog-Scott, of Fort Worth, Chairman of the Live Stock Sanitary Commission, spoke at some length of the Sanitary Commission's work.

Mr. Harry Myers, of Fort Worth, Attorney for the Texas State Veterinary Medical Association, discussed the activities of the legal department. Dr. A. H. Douglass, of the Wichita Falls Board of Health, discussed in his very capable manner "The Veterinarian's Relation to Public Health." Dr. L. B. Ernest, U. S. Department of Agriculture, Bureau of Animal Industry, Washington, D. C., discussed in a masterful way the subject of "Tuberculosis Eradication."

Dr. Mark Francis, Dean of the Veterinary Department, A. & M. College of Texas, gave an illustrated lecture on "The Origin of the Domestic Animals." This lecture was open to the general public and many took advantage of the opportunity to hear Dr. Francis, who is a recognized authority on this subject. Dr. R. C. Moore, of St. Joseph, Mo., spoke of the earlier days in Texas association affairs and finished his address by some fatherly advice to the young practitioner.

Wednesday evening a banquet was given by the Association, at the Jefferson Hotel, to the veterinarians, their wives and friends. Thursday morning the Association met at a centrally

located building, in Fair Park, where an abundance of clinical material was on hand to greet the operators.

"Post-mortem Technic" was demonstrated and discussed by Dr. W. J. Crocker, of Fort Worth, formerly of the faculty of the Veterinary Department, University of Pennsylvania, and author of "Veterinary Post-Mortem Technic," in a manner that was a revelation to all present. "Sterility Work," was demonstrated and discussed by Dr. A. E. Flowers, of Dallas, who had a number of subjects available for demonstration and examination.

Dr. L. E. Warner, of Dallas, demonstrated the radical operation for fistulous withers. The ridgling operation was demonstrated by Dr. W. G. Gregory, of Fort Worth, who also performed an operation on a fistulous withers case. Gastrotomy in a dog was performed by Dr. W. G. Brock, of Dallas, who removed a rubber ball from the subject. Before the operation Dr. Brock had an X-ray examination made, which disclosed the nature of the foreign object.

Dr. R. C. Moore, of St. Joseph, Mo., operated on a fistulous tract and an open joint, in which operation he demonstrated "dulcine," a new local anesthetic. Cesarian section in a sow was demonstrated by Dr. E. F. Lanham, of Amarillo. Spaying of a bitch was performed by Dr. H. L. Blackburn, of Fort Worth. An abdominal tumor was operated on by Dr. R. H. Harrison, of Fort Worth. An abundance of other clinical material was on hand for diagnosis and treatment. It was the consensus of opinion that for the educational value, attendance and interest manifested, a very successful meeting was enjoyed.

The ladies were entertained by the wives of the Dallas and Fort Worth veterinarians, who provided shopping tours, theatre parties and a tea at the Country Club, all of which culminated in the forming of an auxiliary, with the following officers being elected. President, Mrs. L. E. Warner, of Dallas; First Vice-President, Mrs. F. E. Wellfare, of Dallas; Second Vice-President, Mrs. W. R. Sanderson, of Brownwood; Secretary-Treasurer, Mrs. L. G. Cloud, of Fort Worth.

J. W. PATTON, *Secretary-Treasurer.*

Plan To Go To Montreal, August 27-31.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION

The forty-first annual meeting of the Michigan State Veterinary Medical Association was held at the Michigan Agricultural College, East Lansing, June 26-27-28, 1923. This was really the second annual meeting held this year, due to the fact that the constitution and by-laws was amended in February, so as to change the time of the annual meeting from February to June.

Particular attention was given to bovine infectious abortion and sterility, throughout the entire program. Dr. F. W. Chamberlain gave a demonstration on "The Anatomy of the Reproductive Organs of the Cow." Dr. E. T. Hallman covered the subject of "The Physiology of Reproduction in the Cow," as well as "The Diagnosis of Pregnancy." He also addressed the meeting on "The Care and Treatment of the Aborting Cow," "The Sequelae of Abortion Disease," and then gave a summary of "Practical Methods for Controlling Infectious Abortion and Sequelae."

Mr. I. F. Huddleson demonstrated the "Technique of Drawing Blood Samples for Serological Tests for Infectious Abortion," and later gave "An Interpretation of the Blood Tests for Infectious Abortion and Carriers." Dr. Ward Giltner spoke on general phases of the abortion problem, and called attention to the fact that the Division of Veterinary Medicine of the Michigan Agricultural College was going to devote the major portion of the time available for research work, to the study of this disease, as it was believed that abortion and its sequelae were responsible for a greater financial loss to the live stock industry of the State than any other one disease.

Dr. H. J. Stafseth demonstrated "The Technique for Drawing Blood Samples from Chickens for the Agglutination Test for Bacillary White Diarrhea," and also the technique of the test itself. Dr. Stafseth also gave a demonstration of caponizing. Dr. F. E. Stiles, of Battle Creek, Mich., gave a demonstration of the technique he uses for the administration of copper sulphate for the treatment of stomach-worm infestation in sheep. (See page 473, the JOURNAL, July, 1923.)

Dr. E. W. Porter, of Reynoldsburg, Ohio, presented a paper entitled "Some Experimental Work in Hog Cholera." (See this JOURNAL, page 580.)

Dr. H. B. Raffensperger, Bureau of Animal Industry, Chicago, Ill., gave a splendid address on "Ascarids in Swine." He ex-

plained the so-called "McLean County System of Swine Sanitation," and gave a demonstration of the gross appearance of the lungs in pigs infested with the ascarid larvae, as well as the method for demonstrating these, in fresh lung tissue, by means of the microscope.

Dr. A. E. Erickson, of Charlotte, Mich., gave "Some Observations in Cattle Practice." Dr. A. B. Curtice, of Hillsdale, Mich., spoke on "Tuberculin Testing from a Practitioner's Standpoint." Dr. W. E. Coomer, of Bay City, Mich., brought in the report of a committee that had been appointed for the purpose of establishing a standard of prices for tuberculin testing and hog cholera vaccination.

Dr. S. R. Johnson, of Lansing, Mich., presented a splendid paper entitled "Progress," in which he brought out many very good points. He spoke of the diversified nature of veterinary science at the present time, and the necessity for the practicing veterinarian being well posted on all phases of his work. He stressed the desirability of veterinarians keeping better records of their cases and called attention to the desirability of veterinarians maintaining neat and attractive offices and hospitals.

Mr. W. C. Geagley, Chief Chemist, State Department of Agriculture, Lansing, Mich., presented the subject of "Stock Tonics and Remedies." He explained the psychology of this business and reported the analysis of a considerable number of these preparations which are being advertised and sold extensively at the present time. He advocated the enactment of a law which would require the publication of the formulae of such nostrums.

Dr. Joseph Hawkins, of Detroit, addressed the meeting on his "Observations in California." Dr. Hawkins has just recently returned from a six-months sojourn in California, and he related his experiences and observations while there. Dr. Hawkins could not refrain from reminiscing on the early history of the Michigan State Veterinary Medical Association. He called attention to the fact that the Association would be forty years old on July 23, 1923. He also directed attention to the fact that he was one of the three surviving charter members, thirteen of the sixteen already having passed on to their just rewards.

Mr. H. W. Norton, Director of the Bureau of Animal Industry, reviewed the history of the various events in connection with the appropriations made by the recent legislature, in connection with

tuberculosis eradication work. He read a ruling recently made by the State Administrative Board:

> "That all testing of herds be conducted by the Department of Agriculture; that in exceptional cases, if the owner of a herd wishes the same tested, he shall submit a report by a veterinarian as to the conditions and the probable number of reactors; that then, before any expenditure for indemnities is made, the veterinarian be specifically authorized by the Department; that the total amount for the year 1923-1924, for this purpose, be limited to $25,000.00."

Dr. C. H. Clark, in the absence of Dr. B. J. Killham, State Veterinarian, assured those present that the Department of Agriculture had put forth every possible effort to secure an allottment of $85,000, approximately one-third of the appropriation, for indemnities on tests of local practitioners. A resolution was adopted authorizing the President to appoint a committee of three,having power to act, to wait upon the Governor and endeavor to secure a reconsideration of the ruling of the Administrative Board, by which the amount of indemnities, to be paid for cattle condemned upon the tests of local practitioners, had been reduced to $25,000.

Thirty-five veterinarians were admitted to membership, which indicated the renewed interest which is being taken in the Association. Hon. H. H. Halladay was elected to honorary membership, in recognition of his valuable services to the live stock industry of the State.

A very attractive social program had been arranged. The first evening of the meeting, Hon. and Mrs. H. H. Halladay gave a reception at their home on the Campus to the visiting veterinarians and their wives. This was followed by a motion picture entertainment, consisting of three films, "The Tale of Two Bulls," "The Horse in Motion," and "Guarding the Health of Live Stock." The pictures were followed by a dance.

Wednesday evening supper was served at the picnic grounds, following which addresses were made by Hon. H. H. Halladay, Professor Gunson of the M. A. C. Faculty, and Doctor C. G. Slemons, Health Commissioner of Grand Rapids, Mich., on the subject of "Goitre." Over 200 were present at the supper.

Dr. A. T. Cornell, of Lansing, took first prize in a judging contest held Wednesday afternoon, scoring 270 out of a possible 300 points. In a baseball game played after the judging contest,

the Non-Practicals, captained by Dr. Judson Black, defeated the Practitioners, captained by Dr. W. N. Armstrong, by a score of 9-0.

Officers for the ensuing year were elected as follows: President, B. J. Killham, of Lansing; 1st Vice-President, H. Preston Hoskins, of Detroit; 2nd Vice-President, F. E. Stiles, of Battle Creek; 3rd Vice-President, W. E. Coomer, of Bay City; Sec'y.-Treasurer, E. K. Sales, of East Lansing; Member of the Executive Board (for a term of five years) A. McKercher, of Lansing.

We Want 5000 Members This Year.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION AND FOURTH ANNUAL UNIVERSITY VETERINARY CONFERENCE

The fortieth annual summer meeting of the Illinois State Veterinary Medical Association convened in the Auditorium of the University of Illinois, at Champaign-Urbana, Tuesday morning, July 10, 1923, with Dr. D. S. Jaffray presiding. The address of welcome was delivered by Dean Mumford, of the College of Agriculture.

The first paper on the program was by Dr. W. N. Neil, Bureau of Animal Industry, Chicago, entitled "The Organization and Work of the Federal Bureau of Animal Industry." Dr. Neil confined his paper chiefly to the activities of the Bureau in the Chicago territory. His paper will be published in the JOURNAL.

Dr. F. A. Laird, State Veterinarian of Illinois, then addressed the meeting on "The Organization and Work of the State Bureau of Animal Industry." Dr. Laird made it very plain that he intends to continue the administration of his office without fear or favor. He impressed upon the Assistant State Veterinarians that it is absolutely essential for them to do all state work, testing, etc., *personally*, and not leave such work to their assistants. He explained the *per diem* system of paying for such work, and asked the veterinarians not to expect a full day's allowance for work that required only an hour or two. He also explained why Illinois does not recognize the intradermal test for interstate shipments of cattle, stating that many men in the State were as yet unfamiliar with the proper technique of the test. Dr. Laird also explained why he would refuse to accept diagnoses made in any laboratory other than the one at the University.

Dr. W. H. Welch, President of the American Veterinary Medical Association, addressed the meeting on Association affairs, outlined the plans so far made for the meeting in Montreal, and urged a large attendance from Illinois. He was followed by Dr. H. Preston Hoskins, Secretary-Editor of the A. V. M. A., who gave additional information in connection with the program for the Montreal meeting, and gave a brief resumé of what has been accomplished during the past year under the new arrangement. He spoke of the difficulties he faced in publishing the JOURNAL, and explained why it was such a hard matter to please everybody. Dr. Hoskins stated that he had received very few complaints about the JOURNAL and had every reason to believe that his efforts to improve it were meeting with a fair measure of success.

Lt.-Col. N. S. Mayo, of the Veterinary Officers' Reserve Corps, presented the subject of "The Relation of the Civil Veterinary Profession to the Army Veterinary Service." This paper will be published in the JOURNAL.

At the afternoon session Mr. W. S. Corsa, of White Hall, Illinois, presented a paper entitled, "The Live Stock Industry of Illinois." This paper contained a vast fund of information dealing with the live stock situation in Illinois. This paper also is to be published in a future issue of the JOURNAL.

Dr. J. Howard Beard, Health Officer, University of Illinois, presented "The Relation of Animal Diseases to Public Health." This was a very comprehensive presentation of the subject, and dealt with both bacterial and parasitic diseases of animals which had been found to be communicable to man.

Professor H. P. Rusk, Head of the Department of Animal Industry, University of Illinois, read a paper entitled "The Veterinarian's Relation to Agriculture." His paper fairly bristled with observations which he had made in the course of his work, which was constantly bringing him in contact with farmers, breeders, county agents, farm advisors and veterinarians. He stated that he was of the opinion that certain indiscretions on the part of county agents and farm advisors had resulted in more harm to the veterinary profession than to any other interest in Illinois. He urged closer cooperation on the part of veterinarians and county farm bureaus, and he related the efforts which had been made by the University to bring this about.

Dr. J. J. Lintner, Bureau of Animal Industry, Chicago, was unable to be present to present a paper entitled "The Progress of

Bovine Tuberculosis Eradication in Illinois," but Dr. O. Augspurger was present to speak for him. Dr. Augspurger reported the progress being made in a number of the counties in Illinois, especially in connection with area work. He also gave an analysis of the distribution of both state and federal funds which were available for tuberculosis eradication work.

Dr. J. W. Connaway, of the University of Missouri, gave an illustrated address on "Some Pointers on Infectious Abortion in Swine." Dr. Connaway gave some first-hand information, the result of the investigational work which he has been conducting in his department. His remarks were illustrated with some very fine lantern slides.

Dr. H. H. Mitchell, Associate Professor of Animal Nutrition, University of Illinois, presented "The Mineral and Vitamin Requirements of Farm Animals and the Need for Mineral and Vitamin Supplements." Dr. Mitchell's paper indicated his close familiarity with the subject, as well as the research work which has been conducted in all parts of the world to determine the relationship between deficient diets and a number of animal diseases. He summarized the subject of vitamin requirements with a statement substantially to the effect that the fat-soluble vitamin A is of importance only to swine and poultry, under the usual farm conditions. Sheep and cattle undoubtedly get plenty of the fat-soluble vitamin in hay. He stated that calcium and phosphorus were the most important mineral elements in the diet, and that usually good roughage would supply these. Seeds and their by-products are usually deficient in calcium. He stated that farm feeds are considerably cheaper than commercial supplements, and he cautioned the veterinarians to accept with reservations the claims being made in certain current advertisements.

In the evening, following a musical entertainment at the Women's Building, Dr. David S. White, of Columbus, Ohio, delivered an address on "The Veterinary Profession." He was followed by Dr. Bohuslav Sykora, of Czecho-Slovakia, who spoke upon the veterinary situation in his country. One of the interesting remarks made by the speaker was to the effect that there was no farmer-vaccination in Czecho-Slovakia.

The morning session of the second day was opened with an address by Dr. C. P. Fitch, of the University of Minnesota, on "The Present Status of Our Knowledge of Infectious Abortion in Cattle." He was followed by Dr. W. L. Boyd, of the same

Institution, who spoke on "Sterility in Cattle." These two closely related subjects were admirably presented and thoroughly discussed by a large number of those present.

In the afternoon a wonderful clinic was held in the Live Stock Pavillion. This was divided into five sections: horses, cattle, swine, dogs and poultry. One of the demonstrations which proved most interesting was "The Technique of Passing the Stomach Tube in Swine," by Dr. E. R. Steel, of Grundy Center, Iowa. Dr. Steel also demonstrated his method of administering capsules to swine, which is done without the use of the speculum.

In the evening a banquet was served at Cooper's Cafe, the capacity of which was tested to the limit. Dr. W. J. Martin, of Kankakee, officiated as toastmaster, and called upon about a dozen of the prominent veterinarians present for after-dinner speeches.

The Friday morning session was opened by Dr. F. E. Beaudette, of the Kansas State Agricultural College, who presented a splendid paper entitled "The Field of Poultry Practice and Its relation to the Practitioner." Dr. Beaudette showed a wonderful grasp of poultry diseases and methods of diagnosis, as well as treatment. Quoting from the recent census, Dr. Beaudette stated that there were 360,000,000 chickens on the farms in this country, valued at $1,047,000,000, which was an increase of approximately 28 per cent in ten years. Dr. Beaudette recommended against the treatment of white diarrhea, because of the danger of recovered birds becoming carriers of the infection.

Dr. E. R. Steel then presented "The Field of Swine Practice and Its Relation to the Practitioner." Dr. Steel reported that although 4,800 farmers had taken the course of instruction in hog vaccination at the schools in Iowa, only about 500 of these farmers were now doing their own vaccinating. Dr. Steel's paper was brim-full of practical suggestions, the result of his extensive observations made in Iowa and other states. He pointed out that swine practice was the mainstay of the practitioner in the Corn Belt, and he urged every practitioner to read all the veterinary literature he could and to attend as many veterinary meetings as he was able.

Prof. J. B. Rice, of the Animal Husbandry Department, addressed the meeting on the subject of "The Essentials of Swine Feeding." He gave statistics on the number of hogs marketed this year in 68 markets. He said that with the price of corn up

and the price of hogs down there was no profit in feeding corn to hogs at the present time. He thoroughly discussed the various feed stuffs, from the standpoint of their usefulness and economy as hog feeds.

Dr. J. S. Lucas, of Abingdon, Ill., gave a report on "Lead Poisoning in Cattle," illustrated with lantern slides. A large number of cattle had been poisoned through eating corn which had been mixed with lead carbonate in a freight car. The classical symptoms of lead poisoning were absent in the earlier cases, probably due to the large amount of lead which the infected cattle had digested, and, as a result, an early diagnosis as to the exact nature of the disease was impossible. A clue to the true condition was obtained through chemical analysis of the stomach contents of one of the dead animals.

Dr. V. C. Michels, Superintendent of the Division of Registration, addressed the meeting on the subject, "The License to Practice Veterinary Medicine in Illinois." He briefly described the work of his office and what the Division of Registration hoped to accomplish.

Prof. E. Roberts, of the Department of Animal Breeding, read a paper entitled "The Relation of Heredity to Certain Veterinary Problems." This was a fine paper and contained a great deal of very interesting information on the subject of heredity and so-called inherited unsoundnesses.

Dr. E. L. Quitman read a paper entitled, "The Treatment of Convulsions in Canines." Dr. Quitman divided convulsions into two classes: those which were due to removable causes and those which were incident to diseases caused by infections and dietetic deficiencies. The drugs which Dr. Quitman uses most extensively in controlling convulsions are: arecoline, apomorphine, luminal-sodium, barbital (veronal) and fluid extract of horse nettle berries, the latter a non-official remedy. Dr. Quitman's paper was full of practical suggestions for the veterinarian having much small animal practice.

Dr. John Reichel, Director of the Mulford Laboratories, Glenolden, Pa., concluded the program with an address on "Rabies." Dr. Reichel described the experiments which have been carried on in the Mulford Laboratories in the development of rabies vaccine. He called attention to the fact that apparently a very substantial immunity could be developed following the injection of rabies virus that has been killed. In one experiment it was demonstrated that a considerable number of animals

could be prevented from developing rabies, when the vaccine was administered as late as 72 hours after an infective dose of virus. Considerable discussion on the subject followed Dr. Reichel's address.

The meeting closed with the transaction of some routine business.

Plan To Go To Montreal, August 27-31.

VETERINARIANS THE MAINSTAY OF ANIMAL INDUSTRY

The man who doctors animals is a worthy coadjutor of the man who doctors men, and the Veterinary School of the University of Pennsylvania stands as high in its field as the Medical School of the same institution. The legislature has been asked to provide $120,000, apart from the University's general appropriation, to take care of the needs of the Veterinary School for two years. The best reason for granting this money is to be found in the work of the school.

In the annual budget of waste is an item of $5,000,000 to cover the cost of animals killed by disease. The only way to stop such waste is to enlarge the research and preventive branches of veterinary medicine, which is one of the projects embraced in the Veterinary School's program.

Animal industry in Pennsylvania is an important one. The "vet" is its mainstay. The universities of Pennsylvania and Cornell are the only colleges in the East which maintain first-class schools of veterinary medicine. The New York State Legislature thought so well of the work at Cornell last year that it appropriated $120,000 for the veterinary school.

In the past Penn's Veterinary School has been getting sufficient money from the University's general appropriation to meet the annual deficit. This has come lately to around $40,000. There has been nothing over for extension of the work. The $60,000 annual grant will give a surplus for gaining some ground, by extended laboratory equipment and larger personnel, in the fight against animal diseases.

The veterinarian, it must be remembered, is the man who safeguards the public against meat and milk infections. The State cannot afford to be less generous with the Pennsylvania school which stands out at the center of veterinary science.

Philadelphia Public Ledger.

COMMUNICATIONS

VETERINARY CORRESPONDENCE COURSES

To the Editor:

My attention has been called to your editorial "How Come?" and to the action of the Philippine Veterinary Medical Association reported in the May issue of the "Journal of the American Veterinary Medical Association."

Your editorial is somewhat ambiguously worded and I am therefore not clear whether you have fallen into the same error as the Philippine Veterinary Medical Association, which has interpreted an advertisement appearing in the *Veterinary Journal* as "offering degrees," whereas it is offering tuition only.

In case you should be labouring under this misapprehension I should like to point out that veterinary degrees in this country can only be conferred by the recognized authorities and that "purchasable" degrees *never* existed.

On the other hand tuition by correspondence for almost every degree (medical, veterinary, dental, law, etc.) is undertaken by various coaching agencies. It is a legitimate business and has been the means of helping many a backward student to obtain his diploma. Moreover, these agencies are countenanced by the professional classes, who permit their advertisements to appear in their journals, *vide* the *British Medical Journal* (organ of the British Medical Association) and the *British Dental Journal* (organ of the British Dental Association), to instance only two official professional papers. No coaching agency, however, can confer or issue any degree or diploma; nor have they ever, in Great Britain, been able to do so.

We are sending a copy of this letter to the Philippine Veterinary Medical Association and are enclosing pages from the *British Medical Journal* and the *British Dental Journal* bearing advertisements of coaching agencies for your perusal.

I shall be glad if you will allow this letter to appear in the columns of your next issue.

With fraternal greetings,

Believe me,

Yours sincerely,

Frederick T. G. Hobday,

Editor of the Veterinary Journal and Honorary Member of the American Veterinary Medical Association.

London, England, June 6, 1923.

A NOTE ON DR. WILLIAMS' ARTICLE ON "THE MALE AS A SPREADER OF GENITAL INFECTIONS."

To the Editor:

In an article on "The Male as a Spreader of Genital Infections," appearing in the June issue of the Journal, Dr. W. L. Williams makes reference to an article on equine infectious abortion by the undersigned, placing an unintended and misleading interpretation upon the same. While we hesitate to use the columns of the Journal for such discussions as this, we feel that the same should not be permitted to go unnoticed.

Apparently, the criticism is a result of our adherence to the belief that there exists a specific type of organism, capable of inducing abortion in mares. We readily agree that pre-natal death and abortion are frequently the result of conditions and infections other than specific infection. Further, we are in accord with the view that too little attention has been paid to the part the male may play in breeding problems. The fact remains, however, that aside from other factors which may produce abortion, there is an important type of bacterial life, capable of being transmitted from animal to animal, which is preeminently an abortion-producing organism.

Bacterium abortus equi gave evidence of its presence among the breeding animals of 3 of the Army Remount Depots during the fall and winter of 1919-1920. A fourth depot was subsequently involved through the shipment of animals to it from one of the infected depots early in the outbreak. At one of these depots 45 abortions occurred in a little over two months. Three of the Army laboratories, in cooperation with the veterinary personnel of the depots involved, were engaged in the investigation of the disease. A specific infection was manifesting itself in an acute manner, causing abortions among mares in various stages of gestation, on a wholesale scale. A bacterin prepared from strains of *Bact. abortus equi* isolated proved of distinct value in controlling the malady. Such was the substance of our report.

Nowhere did we indicate, as might be inferred from Williams' article, that such biological product would solve all the problems of sterility or failure to conceive, lend functional activity to atrophied testicles, clear up streptococcic and all other types of infection, etc. Our one contention—and we reiterate it here—is that such bacterin proved of distinct value in controlling an

acute outbreak of abortion which we maintain was due to *Bact. abortus equi.*

We were fully cognizant of the breeding problem which subsequently arose at one of the four depots included in our report—the one referred to by Williams. The extremely low percentage of conceptions obtained with the mares at this depot was most certainly a matter of much concern. However, without discounting in the least the seriousness of such situation, in our investigations, and from Williams' report, in his investigation, there was no evidence that such condition was a result of the continued activities of *Bact. abortus equi.* There is no reason why good results obtained in the control of one type of virulent infection among the animals at the four depots involved should be discounted because another condition, aside from the first, presented itself at one of the depots.

G. H. Koon
R. A. Kelser

Washington, D. C., July 6, 1923.

PROGRESS IN MEXICO*

To the Editor:

I am pleased to report to you that during the month of March, 1923, there was founded in this Country the General Direction of Zootechnics. This institution has filled a prominent place in our line. The Direction of Zootechnics will take care of solving all problems related to live stock, the campaign against the infectious-contagious diseases of live stock, veterinary hygiene, etc.

It has started already a completely revised edition of the laws of live stock sanitation.

Recently a convention was celebrated of all its veterinary doctors in service, distributed throughout the country, and organized a National Exposition of cattle, which has been a complete success.

The Director of Zootechnics is, at the present time, Dr. Jose Gomez Esparza, one of the most prominent Mexican veterinarians. The writer is a member of the institution, having charge of the Department of Veterinary Medicine and Live Stock Sanitation.

Under separate cover I am sending you a Bouletin printed by the Direction of Zootechnics regarding the live stock Exposition

*Translation by Dr. N. S. Mayo.

mentioned.

I would appreciate it if some of these notes should be published in the JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION.

I am once more,

Yours very truly,

L. SANTA MARIA,
Res. Sec. (A. V. M. A.) for Mexico.

Mexico, D. F., Mexico, June 22, 1923.

Plan To Go To Montreal, August 27-31.

PROPOSED REVISION OF CONSTITUTION AND BY-LAWS

TO THE EDITOR:

The comments relative to the proposed revision of the constitution that have been published have been read with interest. One or two of the critics state that the procedure has not been in accord with Article VI of our present constitution. It will be found that the report of the Special Committee on Closer Affiliation with State and Provincial Associations was adopted. One of the recommendations provided for a special committee to confer with the Executive committee to study the plans "herewith submitted." The plans were submitted as a proposed revision of the constitution. The special committee and the Executive committee held a joint session, in December, and their recommendations occur in the March issue of the JOURNAL. Wherein is there any irregularity? What portion of Article VI of the Constitution has been violated?

The proposed amendments may not meet with the approval of the association at Montreal and can be disposed of promptly. It is very evident, however, that some rather drastic changes should be made in the constitution of the A. V. M. A., so that the practitioner in rural districts and the B. A. I. veterinarian who is remote from veterinary centers shall feel that they are really a part of the veterinary profession and have something to say regarding our National Association.

Is the A. V. M. A. to continue to be the representative of the relatively few who attend the annual meetings, or is it going to become representative of the veterinary profession of America?

A. T. KINSLEY.

Kansas City, Mo., July 10, 1923.

COMMENCEMENTS

INDIANA VETERINARY COLLEGE

The annual commencement of the Indiana Veterinary College was held in the Auditorium of the College, May 18, 1923. Dr. T. A. Sigler, of Newcastle, Ind., addressed the graduates and Dr. L. E. Northrup, President, conferred the degree of Doctor of Veterinary Medicine on twenty-five candidates, as follows: Albert L. Blair, Vincent D. Bohannan, Harry W. Brown, Norval E. Christenberry, Raymond H. Dwyre, Fred Godsall, Roscoe E. Griffith, Boyd Jeffers, Fred O. Jacobson, Joseph T. Kennelly, Irvin S. Kleeman, J. Willard Larrison, J. John McClure, William M. Mohler, Glen H. Moore, John E. Murphy, Frank T. Owens, Bert S. Pierson, Marvin H. Rolighed, Arthur B. Russel, Henry R. Schrumpf, Joseph S. Shirley, Amos A. Turner and Leslie E. West.

Dr. William M. Mohler of the graduating class, is a son of Dr. John R. Mohler, Chief of the Bureau of Animal Industry, Washington, D. C.

Does Your Wife Know About The Women's Auxiliary?

ONTARIO VETERINARY COLLEGE

The spring examinations of the Ontario Veterinary College, Guelph, Ontario, were completed on April 30th, and the degree of Bachelor of Veterinary Science was conferred the following day, May 1st, at a special Convocation of the University of Toronto on thirty-three graduates, as follows:

C. B. Baker, A. Bishop, E. S. Brown, E. S. Browne, A. R. Campbell, G. M. Clark, J. A. Coad, R. G. Cuthbert, F. S. Egan, S. R. Elkow, W. R. Gunn, C. S. Harris, J. L. Harvey, T. H. Heath, W. C. Hodgins, E. G. Kerslake, D. J. Lawson, H. M. LeGard, F. W. Leslie, T. B. Lindsay, R. Macdonald, A. W. McLeod, A. L. McNabb, S. E. Roe, W. A. Ross, P. L. Rouse, L. S. Side, E. V. Slack, O. C. Spencer, H. J. Tingley, L. R. Waggoner, J. W. Watt, C. Young.

Prizes and honors to the members of the graduating class were awarded as follows:

General Proficiency: First prize, H. M. LeGard, Toronto, Ont.;

Second prize, A. R. Campbell, Inverness, N. S.; Third prize, A. L. McNabb, Smith Falls, Ont.

Honourable Mention: F. S. Egan, R. Macdonald, T. H. Heath, D. J. Lawson, S. E. Roe, W. A. Ross, R. G. Cuthbert, W. R. Gunn, J. A. Coad, G. M. Clark, E. S. Brown, C. B. Baker, P. L. Rouse, O. C. Spencer, S. R. Elkow, A. Bishop, E. G. Kerslake, W. C. Hodgins, C. S. Harris, E. V. Slack.

Bacteriology: Special prize awarded by Dr. R. Gwatkin to A. L. McNabb, Smith Falls, Ont.

The Helen Duncan McGilvray Honorarium awarded to R. G. Cuthbert, Vancouver, B. C.

Plan To Go To Montreal, August 27-31.

ALABAMA POLYTECHNIC INSTITUTE, COLLEGE OF VETERINARY MEDICINE

Commencement exercises were ushered in by the baccalaureate sermon, on Sunday, May 13. The following day, May 14th, was Alumni Day, devoted largely to meetings of the Alumni Association, the military exercises, and the delivery of prizes and receptions. Tuesday, May 16th, was Commencement Day proper, when about 250 graduates in all of the various courses received their diplomas. Among these were the following who received their degrees in veterinary medicine:

William W. Barlow, John William Berry, James Monroe Bryan, W. B. Castleberry, Cristobal Cuadras, Jr., James Vardaman Duckworth, C. I. Harkins, James Lee Orr, W. M. Ray, Joseph H. Ryland, W. C. Simmons, J. H. Staples, L. R. Sullivan.

Immediately after the graduation ceremonies, the Veterinary Medical Students' Association issued certificates to all of the graduates who were members of that Association. This is a custom that has long been adhered to and is always followed immediately after graduation.

A number of the graduates have gone into practice, some into meat and milk inspection, one into state work, and another will take up teaching.

Does Your Wife Know About The Women's Auxiliary?

KANSAS STATE AGRICULTURAL COLLEGE, DIVISION OF VETERINARY MEDICINE

The sixteenth annual commencement exercises were held Thursday, May 31, 9123, at Manhattan, Kansas. Those who finished their course in veterinary medicine and received their degrees were:

James Frederick Adee, Russell Spencer Beaver, James Joshua Black, Carl Alfred Brandly, Frank Wright Crawford, Kent Ruggles Dudley, Frederick Earl Emery, Timothy Joseph Foley, Jr., William Darius Foss, Lloyd George Grandfield, John Albert Howarth, Glenn Benson Kirkwood, Elden Emanuel Leasure, Ching Sheng Lo. Andrew James McKee, Dorsey Addren Sanders, Rush Urban Taylor, Donald Albert Yandell.

In addition to these the following received their veterinary degrees, having completed their work with the summer session of 1922:

Aubrey McDonald Lee, James Alexander McKitterick, Jay Ralph Starkey.

Dr. Everett Alonzo Tunnicliff (K. S. A. C. '21) received the degree of Master of Science.

AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS, SCHOOL OF VETERINARY MEDICINE

Commencement exercises were held Tuesday, June 5, 1923, at which two members of the graduating class were awarded the degree of Doctor of Veterinary Medicine:

Frank S. Palmer and Archie Stallings.

COLORADO AGRICULTURAL COLLEGE, DIVISION OF VETERINARY MEDICINE

The annual Commencement was held in the College Auditorium Thursday, June 7th. Sixteen members of the graduating class received the degree of Doctor of Veterinary Medicine, as follows:

Van L. Bruns, William F. Fisher, Edward E. Harnden, Glen C. Harrington, Fred W. Lange, Edward G. LeDonne, Ronald A. McDonald, Jack N. Matheson, Frank P. Mathews, Luther D. Meyers, Leonard R. Pratt, Earl A. Price, George W. Rueter, Walter Schumacher, Charles R. Strange, Frank C. Wilson.

In addition to his veterinary degree, Frank P. Matthews was awarded the degree of Bachelor of Science.

We Want 5000 Members This Year.

IOWA STATE COLLEGE, DIVISION OF VETERINARY MEDICINE

Alumni Day was celebrated on Saturday, June 9th. Quite a large number of alumni were back, and a number of classes held reunions. The baccalaureate sermon was delivered to the graduating class on Sunday, June 10th, by the Rev. John Timothy Stone, of Chicago. The sermon was very forceful and to the point, and one of the keynotes was cooperation. Commencement exercises were held Monday, June 11th, and the following received the degree of Doctor of Veterinary Medicine:

Donald D. Baker, Elmer Brockmeier, William P. Brower, Lester H. Brown, Milton I. Brown, Roy F. Hess, Laurence B. Hines, Robert O. Hughes, Casper H. Larson, Charles B. McGrath, Robert W. Merriman, Fred Patterson, Roy Patterson, Johnson R. Roche, Hubert C. Smith, Duran H. Summers, Gordon Thomas, James H. Yarborough, Banjamin A. Zupp.

Mr. Casper H. Larson was honor student of his class, and Mr. James H. Yarborough received the degree of Master of Science in addition to his veterinary degree, having previously received the degree of Bachelor of Science from Clemson College, South Carolina. Messrs. Yarborough and Larson, as well as Donald D. Baker, were initiated into Phi Kappa Phi, an honorary fraternity.

Plan To Go To Montreal, August 27-31.

OHIO STATE UNIVERSITY, COLLEGE OF VETERINARY MEDICINE

The forty-sixth annual commencement was held at the Coliseum, Tuesday, June 12, 1923. Twenty-four candidates received the degree of Doctor of Veterinary Medicine, as follows:

George E. Aidman, Derwin Willoughby Ashcraft, Clinton DeLos Barrett, Leslie Herman Bennett, John Warden Burke, Fred Arthur Clarke, Gay Hartley Duke, Louis Goldberg, Stanley Palmer Graham, George Dewey Jelen, Harry Leslie Kidd, James Addison McComb, John Joseph McCrillis, Emmett Hugo Marquardt, Byron Phillips Merrick, Charles David Morrow, Edgar Michael Neiswander, Gerald Francis O'Malley, Benjamin Franklin Otto, Roger Neland Owen, Ernest Hoyt Patchen, Fred Clarence Pieper, Alphonso Smith, Carl Joseph Wallen.

Have You Secured One New Member This Year?

STATE COLLEGE OF WASHINGTON, COLLEGE OF VETERINARY SCIENCE

Commencement exercises were held on Thursday, June 14, 1923. Four men were granted degrees in veterinary science, as follows:

Perry Blickenstaff, Lloyd Moss, Vernon R. Cline, John A. Ziebarth.

Mr. Perry Blickenstaff was elected to membership in Phi Kappa Phi, the honorary student fraternity, which is considered quite an honor and is evidence of exceptional scholarship. Dr. John A. Ziebarth has accepted a position in Alaska and left for that region immediately after graduation. The three other members of the graduating class went South, to take the California State Board examinations, June 20th.

Does Your Wife Know About The Women's Auxiliary?

MICHIGAN AGRICULTURAL COLLEGE, DIVISION OF VETERINARY MEDICINE

The sixty-fifth annual Commencement was held in the gymnasium, at East Lansing, Monday, June 18, 1923. Seven candidates received the degree of Doctor of Veterinary Medicine, as follows:

Hazen S. Atkins, Donald Hugh Dickie, Ashton William Emery, Sherman Wesley Gingrich, William Russell Hinshaw, Louis Henry LaFond, Fred Martin Shigley.

Hon. Herman H. Halladay received the honorary degree of Doctor of Veterinary Medicine. Mr Halladay has been Secretary of the Michigan Agricultural College since January 1, 1922. Before that time he was Commissioner of Agriculture, and prior to that Director of the Bureau of Animal Industry; in all of which positions he has come in very intimate contact with the veterinarians of the State of Michigan.

Have You Secured One New Member This Year?

CORNELL UNIVERSITY, NEW YORK STATE VETERINARY COLLEGE

The fifty-fifth annual Commencement was held Monday, June 18, 1923. Twenty-six members of the graduating class received the degree of Doctor of Veterinary Medicine, as follows:

James Joseph Bogan, John Lawrence Bogan, Clarence Newell

Bramer, Irvin Frederick Brenning, Ellsworth Sheffer Brown, Earl Louis Brunett, Charles Bertram Cain, Lawrence Hayes Conlon, Harold Moon DeVolt, William Herman Dohm, Walter Richard Donahoe, Charles Bessely Freer, George Hoyt Freer, Frederick Abbey Hall, James Henry Joseph Harden, Frank Charles Maus, Clifford Alexander Merritt, William John Moersfelder, William Glenn Robens, James Elias Sherwood, Lloyd Banks Sholl, Philip Rudolph Botha Smith, James Richard Tremlett, George Gustave Emil Vaselius, Earl Franklin Whipple, Aubrey Arthur Wooden.

Dr. Jacob Traum (Corn. '00) received the degree of Master of Science.

The Horace K. White prizes were awarded as follows: First Prize to Aubrey Arthur Wooden; Second Prize to Charles Bertram Cain. The Hollingworth Honorarium was awarded to James Elias Sherwood; the James Gordon Bennett Prize to Lloyd Banks Sholl; and the Jane Miller prizes were awarded as follows: First Prize to Trelford Simpson Miller; Second Prize to George Horace Ludins and Maynard Harold Mires.

Plan To Go To Montreal, August 27-31.

GEORGIA STATE COLLEGE OF AGRICULTURE, DIVISION OF VETERINARY MEDICINE

The 123rd Commencement was held Wednesday, June 20, 1923, in the Chapel, where the commencement exercises of this institution have been held for the past one hundred years. This institution is the oldest state university in the country.

Three members of the graduating class received the degree of Doctor of Veterinary Medicine:

I. P. Coulter, T. Levie, C. J. Durham.

Of the twenty-five students in the Division of Veterinary Medicine, eight made distinctions of one sort or another during their college course, a percentage which will compare favorably with the students in other departments. Dr. I. P. Coulter was Business Manager of the Georgia Agriculturist, a college publication, and has been elected by the Board of Trustees as teacher in the Rehabilitation Section of the Veterinary Division. Dr. T. Levie has been elected to the position of House Surgeon in the Veterinary Division, for a period of one year. This position

each year goes to the member of the graduating class who has attained the-highest standing during the junior and senior years of the course. It carries a salary of $1500.00 and quarters. Dr. C. H. Durham received distinction in debate.

We Want 5000 Members This Year.

UNIVERSITY OF PENNSYLVANIA, SCHOOL OF VETERINARY MEDICINE

Commencement exercises were held in Weightman Hall on Wednesday, June 20, 1923. Eight members of the graduating class received the degree of Doctor of Veterinary Medicine, as follows:

Clarence John Bryer, Raymond Dawson Coneley, Robert Lynn Galt, Raymond James Lynch, John Walter McCullough, John Joseph Mimnaugh, Robert Leslie Wheeler, Edward Alvan Wilson.

The J. B. Lippincott Prize of $100, offered to the member of the senior class who, in the four years spent in the Veterinary School, attains the highest general average in examinations, was awarded to Raymond Dawson Coneley.

The Schuylkill Valley Veterinary Medical Association Prize of $25, offered to the member of the senior class who attains the highest grade in Milk Hygiene, was awarded to Clarence John Bryer.

Have You Secured One New Member This Year?

SPOKANE HOSPITAL DISCONTINUED

The Washington State College Veterinary Hospital, which has been maintained for fourteen years, in Spokane, in conjunction with the College of Veterinary Science, at Pullman, has been discontinued. In the past the senior class has spent the fourth year of the veterinary course at the Spokane hospital branch, where better facilities were offered for clinical work than at Pullman. Henceforth all instructional work for veterinary students will be given at Pullman. According to President Holland, the move was purely one of economy. The hospital building is owned by Drs. S. B. Nelson and Otto Menig, of the Washington State College faculty. They are planning to remodel the building and convert it into an apartment house.

ARMY VETERINARY SERVICE

THE ANNUAL RESERVE OFFICERS' TRAINING CORPS CAMP OF THE MEDICAL DEPARTMENT, CARLISLE BARRACKS, PENNA.

June-July, 1923

The Reserve Officers' Training Corps camp was formally opened June 14 last, being the third camp of its kind held at Carlisle Barracks, Penna. Preliminary reports indicate an attendance of about 200 medical, 45 dental, and 11 veterinary students, a total of 256, from 17 of the larger universities situated in the East. All Reserve Officers' Training Corps units (called the R. O. T. C.) of the First, Second, Third, Fourth and Fifth Corps Areas are sending their medical, dental and veterinary students to Carlisle this year to receive summer training. Sixteen of the professors of Military Science and Tactics form the Camp Staff and serve as company commanders.

The largest representation of students is from Ohio State University; the second largest from Jefferson Medical College, and the third largest from the University of Pittsburgh, twenty-five States and the District of Columbia being represented in the student body.

Colonel P. M. Ashburn, M. C., is the R. O. T. C. Camp Commander; Major J. E. Bastion, M. C., is the Director of Training; Lieut.-Col. Wm. L. Lyster, M. C., is in command of the Provisional Battalion of students, with Major Glenn I. Jones, M. C., as Battalion Adjutant. The Company commanders and other instructors are selected from among the Professors of Military Science and Tactics (P. M. S. & T's.) and from among the commissioned personnel on duty at the Medical Field Service School at Carlisle Bks.

Upon arrival in camp the students are assigned to companies, irrespective of the school R. O. T. C. unit to which they may belong. The first few days are utilized in making physical examinations of the students, the issue of equipment, organizing units, and completing other camp arrangements, this being made instructive. The course of instruction prescribed by the War Department is entirely practical, consisting of demonstrations and problems which the students are required to work out under the supervision of instructors. Instruction begins at 7 o'clock a. m., the first two hours being devoted to calisthenics, squad

and company drills. The later periods in the day are utilized for demonstrations and short practical talks explanatory of personal hygiene, water purification, first aid, field sanitation, care of the sick and wounded on the field, handling Army equipment, and so forth.

The four student companies have been organized into the following units of a Medical Regiment: (1) Regimental Detachment; (2) a collecting Company; (3) an Ambulance Company, and (4) a Hospital Company, rotating at the end of each week, so that every student will have served in each one of these units of the Medical Regiment prior to his departure from camp. Aid stations, and Collecting stations are established, Field Hospitals are also set up and the evacuation of wounded carried out. Soldiers stationed at the post, acting as wounded, are collected, placed on litters in ambulances and brought to the Hospital station, such maneuvers covering about ten miles of territory adjacent to Carlisle Bks.

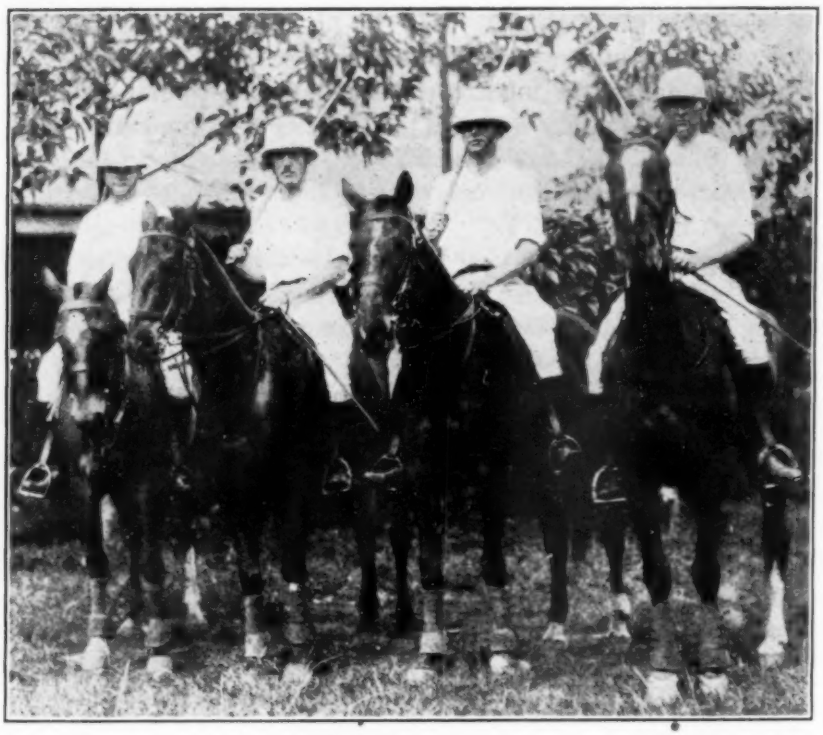
The camp is located near the historic Carlisle Athletic Field, and is similar to the usual military camp, the students in camp being quartered under canvas, utilizing field equipment and mess kits. The mess is operated by an officer who is selected from among the P. M. S. & T's. and civilian cooks are employed to do the cooking, utilizing the students in rotation as K. P's. The students have the benefit of the camp exchange, the post gymnasium, two baseball diamonds, three tennis courts, volley ball equipment, facilities for track events, and classes in equitation. Band concerts are given several times a week and the Service club is available at all times to the students. Motor truck trips to the Battlefield at Gettysburg are planned, and on July 4th a large athletic field meet was held. Reports from Carlisle indicate a ready and loyal cooperation on the part of the student body, which augurs well for this type of preparation for national defense.

Similar but smaller camps for R. O. T. C. of the Medical Department are located at Fort Snelling, Minnesota; Camp Lewis, Washington; and at Fort Sam Houston, Texas.

There are four veterinary R. O. T. C. units in the United States; at Cornell University, Ohio State University, Kansas State Agricultural College, and at the Iowa State College. The units from Cornell, Ohio State, and Iowa State are in camp at Carlisle this summer, while the unit from Kansas State is in camp at Fort Snelling.

POLO IN HAWAII

While the Hawaiian Division polo team was making a great showing on the Pacific Coast, the training of new ponies continued actively at Schofield Barracks and inter-regimental teams were developed. During the first two weeks of April the annual inter-regimental handicap tournament was held at Schofield Barracks.



THE WINNING TEAM

In the preliminaries the 11th Medical Regiment drew the bye, the Freebooters defeated the 13th Field Artillery (7-6), the 8th Field Artillery defeated the Air Service (7-5), and the 19th Infantry defeated the 11th Field Artillery. In the semi-finals the 11th Medical Regiment eliminated the Freebooters by a score of 8 goals to 4; and the 8th Field Artillery, giving the 19th Infantry 4 goals by handicap, was eliminated by the Infantry team by a score of 9 to 4.

The final game of the tournament was played Sunday morning, April 15th. The Medical Regiment gave the 19th Infantry 3 goals by handicap and won handily by a 10 to 5 score; the Infantry scoring but two points, one goal from foul and one from scrimmage.

The entry of a Medical Regiment polo team is new in Hawaii, and probably in the Army. The team was composed entirely of Veterinary Corps officers assigned to the 11th Medical Regiment and is the first successful all-Veterinary Corps team in the service. At a post smoker on April 16th, Major General C. T. Menoher, Division Commander, presented the Regiment with the O. H. Davies Trophy, a large loving cup, and the members of the winning team with individual cups, trophies presented by the Von Hamm Young Company.

The line-up and scoring of the final game was as follows:

11th Medical Regiment

	Goals	
No. 1 Lieutenant Smock, V. C.	0	
No. 2 Lieutenant Caldwell, V. C.	7	(Capt. Team)
No. 3 Lieutenant McCallam, V. C.	1	
No. 4 Lieutenant Wolfe, V. C.	2	
Total	10	

19th Infantry

	Goals	
No. 1 Captain Collins, Infantry	0	
No. 2 Lieutenant Travis, Inf.	0	
No. 3 Lieutenant Proctor, Inf.	1	
No. 4 Captain Fenn, Inf.	1	(Capt. Team)
By Handicap	3	
Total	5	

TO THE BEST BRAINS IN AMERICA

The College of Veterinary Science of the State College of Washington has published a brochure entitled "Choosing a Vocation." This is being mailed in an envelope which bears, in the upper left-hand corner, the following message:

"READ ABOUT A YOUNG PROFESSION THAT INVITES THE BEST BRAINS OF AMERICA."

Needless to say, this brochure makes a strong appeal for the right sort of young man to consider seriously the study of veterinary medicine as his life work.

NECROLOGY

OLAF SCHWARZKOPF

Major Olaf Schwarzkopf, U. S. Army, retired, died at Weisbaden, Germany, on Sunday, June 3, 1923, from pneumonia. He was buried at Capellan, near Coblenz, beside his wife, who died a little over a year ago. Major Schwarzkopf stood out as one of our most prominent figures in army veterinary affairs for many years. He was retired from active service August 19, 1919. He was born at Ostromzetzko, Germany, August 19, 1855. His early training consisted of a nine-year course at the German Gymnasiums at Bromberg and Thorn. Upon graduation from the latter he entered the Imperial Veterinary College, of Berlin, in 1875, and received his degree from this institution five years later, in 1880. From this date until 1885, he engaged in active practice in Germany.

In 1885 Dr. Schwarzkopf came to the United States to take up an assistantship to Dr. F. S. Billings, of New York City. The following year he entered the United States Army, as Veterinarian with the Eighth Cavalry, at that time stationed in Texas, serving for four months at the end of the Geronimo Campaign. In 1885 the Eighth Cavalry made the longest march on record in the United States Army, marching overland from Fort Davis, Texas, to Fort Meade, South Dakota, a distance of two thousand miles. Dr. Schwarzkopf was a member of this command.

On January 18, 1889 he resigned from the Army to accept the chair of Professor of Veterinary Medicine, in the College of Agriculture, University of Minnesota, at St. Anthony Park. He remained in this position until 1894, when he resigned to accept the deanship of the McKillip Veterinary College, of Chicago. He held this position for about two years. In 1897 he was appointed to a professorship in the American Veterinary College, New York City, in which position he remained for about three years.

In July, 1900, he was reappointed to the Army, as Veterinarian, First Class, and assigned for duty with the Third Cavalry. He served in this capacity for two years, taking part in the Philippine campaign in Northern Luzon. When the Army was reorganized, in 1901, Dr. Schwarzkopf was appointed Veterinarian of Cavalry,

and continued to serve with the Third Cavalry until 1913. During this service the Third Cavalry again saw service in the Philippines, from 1905 to 1907.

In 1913 Dr. Schwarzkopf was detailed as Veterinary Instructor, Department of Horsemanship, Mounted Service School, Fort Riley, Kansas, and when the Army Schools were discontinued, due to the Mexican Border trouble, in 1914, Dr. Schwarzkopf again returned to the Third Cavalry, for service in Texas, until 1916. From April to August, 1916, he was Recorder for the Boord of Veterinary Examiners, who examined all army veterinarians for commissions in the Veterinary Corps, organized under the Act of June 3, 1916.

Dr. Schwarzkopf received a commission as Captain in the Veterinary Corps, U. S. Army, June 3, 1916, and was promoted to the rank of Major September 14, 1917. In May, 1917, Captain Schwarzkopf was ordered to the Medical Supply Depot, at St. Louis, as Officer in Charge of Veterinary Supplies. He organized the Veterinary Division of the Depot, and was stationed there until May 1918, when he was transferred to Fort Snelling, Minnesota, as Post Veterinarian. He remained at this station until September, 1918, when he was transferred to Fort D. A. Russell, Wyoming, for duty as Post Veterinarian, and was on active service there when he was retired.

Major Schwarzkopf has been a prolific writer on various subjects pertaining to veterinary medicine. He was a frequent contributor to the pages of our veterinary journals, and for many years was a collaborator on the editorial staff of the *American Veterinary Review*, up to the time when the latter became the JOURNAL OF THE A. V. M. A. He was among the pioneers who advocated proper recognition for the Army veterinarian, and as far back as 1887, while he was stationed at Fort Clark, Texas, he wrote an article entitled "The Necessity of an Organized Veterinary Corps, United States Army."

As far as available information goes, it would appear that Major Schwarzkopf was the first veterinarian in America to employ the Schmidt treatment for parturient paresis of cows. On September 15, 1898, he read a paper on this subject before the annual meeting of the New York State Veterinary Medical Society, in New York City. In this paper he gave four case reports on the new treatment, notice of which came to his attention during the previous winter when he was reading the *Berliner Tierartzliche Wochenschrift.*

He treated his first case on May 23, 1898; the second, June 2; the third, July 6; and the fourth, July 14, the same year; and it is interesting to note that even though failure resulted in the first case, he did not hesitate to give the new treatment a fair trial, with the result that recoveries followed in the second, third and fourth cases treated. This paper was published in the *Journal of Comparative Medicine and Veterinary Archives*, September, 1898, and does not appear to have been mentioned in the list of articles written by Major Schwarzkopf, as published in this JOURNAL in October, 1919.

A letter received from Major Schwarzkopf, written under date of April 18, 1923, brought the word that he was "roving around in Europe, trying to find a place of rest." Perhaps he did not realize, as he penned those lines, how short a time would elapse before he was to enter upon his final rest, one that is real and lasting, and in his case well-earned.

IN MEMORIAM

The body of Olaf Schwarzkopf is dead. His spirit has been wafted perhaps to that mysterious beyond with which there is no authentic means of communication by the inhabitants of this sphere. I knew him well. We were intimate friends. I do not know what his religious beliefs were. The religious belief of an intelligent human being is buried in the fathomless depths of his heart and is his secret only. Why should others inquire about it?

When Olaf Schwarzkopf's body died, there departed from it a noble, unselfish, honorable something which through the ages of man has remained a mystery. At his death the sympathetic heart of a gallant gentleman ceased to beat and the unwavering tenderness of a devoted husband and lover ceased to exist.

I admired and respected in him the superior spiritual qualities to which I myself aspired but never attained.

He was intensely German. Why not? Was he not a German?

Although he was transplanted too late in life to become thoroughly Americanized, I feel sure he was faithful to his adopted country and remained loyal to the flag beneath which he served so honorably.

GERALD E. GRIFFIN.

MORTON EDMUND KNOWLES

Dr. M. E. Knowles died at the U. S. veteran's hospital, at Fort William Henry Harrison, on the morning of June 16, 1923, after a protracted illness, due to myocarditis and Bright's disease.

Dr. Knowles was born at Clinton, Indiana, April 24, 1862. He graduated from De Pauw University and later attended the American Veterinary College, New York City, receiving the degree of D. V. S. in 1884. He was State Veterinarian of Indiana from 1886 to 1892, when the late Marcus Daly induced him to go to Montana, to take charge of Daly's race horses and blooded stock at his Bitter Root Stock Farm. Dr. Knowles remained in this position until 1896, when he was appointed State Veterinarian of Montana, which position he held until 1913.

When the United States entered the World War, Dr. Knowles offered his services to the government and was commissioned second lieutenant in the Veterinary Corps, in 1917. He reported at Camp Grant and was shortly afterward promoted to the rank of major, serving with the 83rd Division overseas. Shortly after his arrival in France he was selected as Chief Veterinarian on the staff of General Pershing. He served in this capacity until after hostilities ceased, having been honorably discharged July 24, 1919.

For some time Dr. Knowles was retained by the Anaconda Copper Mining Company to investigate the dangers of fumes from the copper smelters to the live stock and vegetation growing on the properties located near the Washoe smelter, at Anaconda, as well as the Great Falls smelter.

Dr. Knowles joined the American Veterinary Medical Association in 1891, and always took a deep interest in the affairs of the Association. It was said of him at the time he was elected to the presidency, at St. Louis, in 1904, that he had traveled more miles to attend A. V. M. A. conventions than any other member. Dr. Knowles was the first president to be elected from a state west of Missouri. He was a vice-president for four terms, from 1900 to 1904, when he was elected president. He presided at the meeting held in Cleveland, in 1905. He served on the Executive Committee from 1900 until 1905; as chairman of the Committee on Intelligence and Education, 1900-01; as a member of the Committee on Army Legislation, 1901-03; as chairman of the

Committee on Resolutions, 1903-04; and as Resident State Secretary of Montana, 1896-98 and 1903-04.

He was ex-President of the Montana State Veterinary Medical Association, a member of Woodmen of the World, King Solomon Lodge, A. F. and A. M., of Helena, and of Miriam chapter of the Eastern Star, and of the Acacia Brotherhood. He is survived by his widow and two sons.

Possessed of a fine intellect, a good heart and a cool head, endowed with much executive ability, eminently fair an all his dealings, frank and outspoken, he was characterized as one of nature's noblemen. As a pioneer veterinarian of the great Northwest he demonstrated his professional abilities by giving to Montana a splendid system of animal disease control, under conditions that made such work extremely difficult, and at times most discouraging. In his death our profession and his State have suffered a distinct loss.

EDWARD MERILLAT

Dr. Edw. Merillat died suddenly, at his home in Wooster, Ohio, on the morning of July 5, 1923. His death came quite unexpectedly, as he was in good health up to the time of his death, having celebrated his 62nd birthday just two weeks previously.

Dr. Merillat was born at Mt. Eaton, Ohio, June 21, 1861. He taught school in his younger days, and received the degree of Bachelor of Arts, from Columbia University, in 1888. He received his veterinary training at the McKillip Veterinary College, and was a member of the first graduating class, in 1897. In 1899 he was made Dean of his alma mater, which position he held until 1901. It is interesting to note that with the death of Dr. Merillat, on July 5th, and that of Major Schwarzkopf, on June 3rd, two former Deans of the McKillip Veterinary College have passed on within the short space of a few weeks.

In 1901 Dr. Merillat joined the faculty of the Chicago Veterinary College, as Professor of Physiology and Demonstrator of Anatomy, which positions he held until 1914, when he was compelled to give up teaching on account of a break-down in his voice. He then retired to Wooster, his former home.

Dr. Merillat joined the American Veterinary Medical Association in 1917. He was an honorary member of Gamma Chapter of Alpha Psi Fraternity, in which organization he always took a

deep interest. He was a Mason, both York and Scottish rites, as well as a Shriner. For a number of years he was an associate editor of *Veterinary Medicine*. He leaves a widow (nee Louise Smith), who is a sister of Mrs. L. A. Merillat, the Merillat brothers having married sisters. Interment was at Wooster, Ohio.

IN MEMORIAM

With the death of Dr. Edward Merillat the science of veterinary medicine lost one of its most modest, unassuming, but enthusiastic and untiring workers. Dr. Merillat was not a man who published much, he was not what would be judged by most people today a successful practitioner, but he was undoubtedly a man devoted to the science of his choice, and a student. He loved to study the cases that came to his attention, to classify the facts observed, and draw analogies from his wonderful and valuable store of acquired observations, often for the sake of the study alone.

A naturalist, besides being a veterinarian, he embodied the happy combination so seldom found in our age of specialization. He would experience as great a delight in the study of a paper on fermentations as he would in perusing a report of cesarean section.

A mind keenly alert and elastic was his, even in the last days of his life, quick to grasp the fundamental points of an investigation, to appreciate its inherent difficulties and to suggest possible lines of attack. As a result of his early training, especially interested in comparative anatomy, he took an active interest in physiology, maintaining thereby a salutary balance in his scientific attitude.

Of modest wants, a sympathizing nature and a cooperative spirit, often carried to the point of personal disadvantage, he was an inspiring co-worker, a pleasing companion, and an interesting exception in these days of struggle for financial success. A student by nature, he was a disinterested investigator. As a teacher, in his later years, during his lessons in anatomy, he would often add to the driest facts fragments from his surprisingly vast store of personal experience, which made his lectures delightfully interesting.

Dr. Merillat was a man who took the viewpoint, in the practice of his profession, that veterinary science has social links,

and a great bearing upon human welfare, nutritional as well as hygienic, and that as such it is a social science not to be exploited for personal gains, but be made to yield, directly through the actual practice of the veterinarian and the animal husbandman, and indirectly through sound hygiene and preventive medicine, values of a vast educational and physical import to the human race.

To his scientific training Dr. Merillat added a philosophical attitude which made his ideas often consonant with Metchnikoff's optimism and of a wide bearing. The loss of such a man would seem, at best, untimely, when we consider the great factor for good he really was, and would continue to be, in this world, and the greatness of the work at which he was laboring, the humanizing of veterinary science. It is to be regretted that before dying he could not leave to the world, as a legacy, in a written form, so many of his ideas which could thus yield a far greater crop in the coming generation.

However, his work in life was vast and well done, and it is our duty to pay our parting homage to the friend, the colleague and the teacher, and offer our thanks for the work he has so well and courageously done during his too short stay with us. Let us see to it, that his example of devotion to his science and his fellowmen be not forgotten in the future, and that more encouragement be given, in the training of future generations, to the development of the disinterested service which typified the life of our lost friend.

JOHN SEVENSTER

Dr. John Sevenster, of Hamburg, Iowa, is reported "deceased" by the postmaster at this place. He was a graduate of the United States College of Veterinary Surgeons, 1891, and of the McKillip Veterinary College, 1905. He was admitted to membership in the American Veterinary Medical Association in 1915.

R. LA POINTE

Dr. R. La Pointe, of St. Peter, Minn., died several months ago. He was a graduate of McGill University, in 1885. He practiced in several locations in Minnesota, and was a member of the Minnesota State Veterinary Medical Association. He joined the American Veterinary Medical Association in 1902.

HERMANN M. BIGGS

Dr. Hermann M. Biggs, Commissioner of Health of the State of New York, died on June 28, 1923, at his home on West 58th Street, New York City, from broncho-pneumonia, at the age of 64.

Dr. Biggs was elected to honorary membership in the American Veterinary Medical Association, in 1890, upon the recommendation of the late Dr. H. D. Gill. At that time Dr. Biggs was a member of the Staff of Bellevue Hospital, having gone to that institution as an interne in 1883, and continuing in many important posts up to 1914.

After graduating from Cornell University and Bellevue Hospital Medical College, he studied at the University of Berlin and the University of Greifswald, Germany. He was the first director of the Carnegie Laboratory and gave the first systematic teaching of bacteriology in this country.

From 1901 to 1914 Dr. Biggs was the general medical officer of the New York City Department of Health, during which time he also continued his work at Bellevue as Professor of Therapeutics and Clinical Medicine and, later, as Professor of Medicine. He was instrumental in establishing the first municipal bacteriological laboratory in the world, and served as its first Director. He early utilized bacteriological methods for the sanitary control of infectious diseases.

In 1895 he introduced diphtheria antitoxin into this country and directed its production by the New York City Board of Health. He inaugurated tuberculosis prevention work in New York City, and Dr. Robert Koch is reported to have said that this work was conducted in a manner superior to that of any city in the world. Dr. Biggs suggested making tuberculosis a reportable disease. In January, 1914, he was appointed by Governor Glynn, State Health Commissioner, a position he had thrice previously declined.

J. H. TENNENT

Dr. J. H. Tennent, of London, Ontario, died June 29, 1923, following a lengthy illness. Death was due to cerebral hemorrhage.

Dr. Tennent was a graduate of the Ontario Veterinary College, in 1874. He located immediately in London, and soon established

a very fine practice there, which he conducted along strictly ethical lines. His success in practice was due in no small measure to his kindly disposition. He was liked and respected by all with whom he came in contact, and a credit to his chosen profession.

In 1900 Dr. Tennent joined the Health of Animals Branch, but his headquarters remained at London. Due to his failing health, he was obliged to retire several years ago. He leaves a widow and one son, who is also a veterinarian, in the Health of Animals Branch.

Dr. Tennent was a member of the American Veterinary Medical Association since 1903, having joined when the first meeting on Canadian soil was held at Ottawa, twenty years ago.

WILLIAM JAKEMAN

Dr. William Jakeman, of North Sydney, Nova Scotia, died June 27, 1923, at the age of 79. Death was due to diabetes.

Dr. Jakeman was born in Charlottetown, Prince Edward Island, in 1844. He was a graduate of McGill University, and practiced for many years at Glace Bay, Nova Scotia. He retired from active practice several years ago and was living with his daughter, Mrs. H. W. Burchell, in North Sydney. Dr. Harry W. Jakeman, of Boston, Mass., is a son of the deceased.

Having joined the American Veterinary Medical Association in 1892, Dr. Jakeman was numbered among the older members of the Association, and probably the oldest member from Canada. He has attended quite a few meetings of the Association during his thirty years of membership. For many years he served as Resident Provincial Secretary of the A. V. M. A. for Nova Scotia.

G. M. PREDMORE

Dr. G. M. Predmore, of Avon, Ill., died May 18, 1923. He was a graduate of the Chicago Veterinary College, class of 1905. He practiced at Avon for two years and then entered the employ of the Bureau of Animal Industry, remaining in the service until about 1914, when he resigned to become the manager of the Wichita and Oklahoma Serum Company. He was in poor health for some time prior to his death. He is survived by his widow, his mother, his father and two sisters.

JONATHAN A. BRACKIN

Dr. J. A. Brackin, of Pittsfield, Massachusetts, died suddenly, Wednesday morning, March 28, 1923. Although acute heart trouble was the cause of death, he was well up until a few days before he died. He was a man of giant stature and rugged constitution, and did not use liquor or tobacco in any form.

Dr. Brackin was born in Toronto, Canada, September 3, 1852. He graduated from the Ontario Veterinary College, in 1873, at the age of 21. The year following he located in Pittsfield and built up a very fine practice in the Berkshire country, practicing throughout Western Massachusetts for almost half a century.

He was a member of the American Veterinary Medical Association from 1878 to 1883.

Dr. Brackin accumulated extensive real estate holdings in Pittsfield, at one time having owned the Kenney Hotel property and the North Union Block, on the City's main thoroughfare. He is survived by his widow, one daughter, one son, one brother and three sisters.

HENRY E. PAIGE

Dr. Henry E. Paige, of Amherst, Mass., died June 21, 1923, at his home, South Prospect Street, at the age of 70 years.

Dr. Paige was a member of the Massachusetts Legislature since 1919. From 1920 to 1921 he served on the joint standing committee of State Administration and Towns. Last year, on account of failing health, he relinquished his place on the latter. He was agent of the Massachusetts Division of Animal Industry and chairman of the local Board of Health.

Dr. Paige was born January 30, 1853, educated in Amherst schools, and received his veterinary education at the Ontario Veterinary College, graduating with the class of 1888. He was a member of Pacific Lodge F. and A. M. and the Amherst Club. He is survived by his widow, a brother and a daughter.

PAUL M. WILLIAMS

Dr. Paul Menoher Williams died May 28, 1923, at his home in Pittsburgh, Pa., after a long illness, due to chronic heart disease. Dr. Williams was a graduate of the University of Pennsylvania, class of 1922. He was member of Alpha Psi Fraternity.

WILBUR C. GOSS

Mr. Wilbur C. Goss, of Lakewood, Ohio, a brother of Dr. Leonard W. Goss, Professor of Veterinary Pathology, Ohio State University, was killed June 30, 1923, when he took hold of a guy-wire hanging down in the way of his automobile, on the road from West Hill to Akron, O. The wire carried a very heavy current and death was instantaneous.

Mr. Goss was a graduate of Western Reserve Academy, at Hudson, Ohio, and of Case School, at Cleveland. He held degrees, from the latter institution, in both mechanical and civil engineering. He was very successful in sewer construction work, having recently completed a million dollar contract for the City of Toledo, and was working on a similar contract for the City of Akron, when his untimely death occurred. He is survived by his widow, his aged mother, and Dr. Goss, his only brother.

J. H. FOWLIE

Dr. J. H. Fowlie, of Ottawa, Illinois, died suddenly, November 30, 1922, the result of an automobile accident. Dr. Fowlie was born at Odell, Ill., May 28, 1884 and graduated from the Chicago Veterinary College in 1911. He was an Assistant State Veterinarian of Illinois. He joined the American Veterinary Medical Association in 1920. Dr. Fowlie is survived by his widow, Mrs. Olga Fowlie, who is living at 905 W. Main St., Ottawa, Ill., and through whom this sad information was only recently received.

WILLIAM T. WEBB

Dr. William T. Webb, of Quarryville, Pa., died July 7, 1923. Dr. Webb was a graduate of the University of Pennsylvania, class of 1907. He had been in active practice at Quarryville ever since graduation. He joined the American Veterinary Medical Association in 1912. Death was due to an abscess, involving several ribs. He leaves a widow and three children.

JOHN MONTGOMERY

Dr. John Montgomery, of Anamosa, Iowa, a graduate of Chicago Veterinary College, class of 1912. Joined the American Veterinary Medical Association in 1918. No further particulars obtainable.

ELLWOOD P. McBANE

Dr. Ellwood P. McBane, for a short time at Frankfort, Ind., formerly at Valdosta, Ga. Born Oct. 12, 1890, at Graham, N. C. A graduate of Guilford College in 1913 and of the Indiana Veterinary College in 1916. Jointed the American Veterinary Medical Association in 1920. No further details received.

AUGUSTUS O. KOENIG

Dr. Augustus O. Koenig, of Philadelphia, Pa., died April 4, 1923. He was a graduate of the University of Pennsylvania, having received the degree of V. M. D. in 1893 and the degree of M. D. in 1894. He was engaged in the practice of human medicine.

We Want 5000 Members This Year.

BIRTHS

Dr. and Mrs. Bryce B. Binnall, of Pierson, Iowa, a son, Paul Bryce, March 5, 1923.

Dr. and Mrs. R. D. Parrish, of Montrose, Colo., a son, Rex Damron, April 5, 1923.

Dr. and Mrs. W. B. Denham, of Cumberland, Iowa, a son, James Allen, May 1, 1923.

Dr. and Mrs. Chas. Vanderschaaf, of Avon, S. D., a daughter, Margaret, June 14, 1923.

Dr. and Mrs. D. A. Illingworth, of Bennington, Vt., a daughter, Patricia, March 30, 1923.

Dr. and Mrs. William B. Hawkins, of Wayne, Nebr., a son, William B., Junior, May 26, 1923.

Plan To Go To Montreal, August 27-31.

PERSONAL

Dr. E. H. Marquardt (Ohio '23) has located at Atlanta, Ill.

Dr. H. G. Hodges (Corn. '16) is now located at Owego, N. Y.

Dr. Charles F. Wolf (Chi. '12) has returned to Eau Claire, Mich.

Dr. L. A. Dibert (Chi. '11) of Cullom, Ill., is a breeder of Pointer dogs.

Dr. A. A. Goodman (Colo. '15) has left Pueblo and located at Norwood, Colo.

Dr. C. D. Pearce (Corn. '08) has removed from Owego, N. Y. to Pawling, same state.

Dr. G. Ed. Leech (Chi. '98) has been appointed City Milk Inspector of St. Paul, Minn.

Capt. T. H. Edwards (K. C. V. C. '09) is now at 655 South Catalina Avenue, Pasadena, Calif.

Dr. S. M. Friedley (Ind. '17) of Elizabeth, Ind., is a breeder of Single Comb Rhode Island Reds.

Dr. Geo. W. Todd (Iowa '22) has removed from Fort Dodge, Iowa, to Platte Center, Nebr.

Dr. D. F. Luckey has resigned as Live Stock Commissioner at the East St. Louis Stock Yards.

Dr. G. W. Ornduff (K. C. V. C. '10) has removed from Tupelo, Miss., to West Point, same state.

Dr. C. L. Phillips (Ohio '19) left Greensboro, N. C., May first, and has located at Tazewell, Va.

Dr. R. L. Goodall (Iowa '23) has selected Gilmore City, Iowa as a good place to start in practice.

Dr. Elmer W. Berg (K. C. V. C. '10) is back at the State Fair Grounds, St. Paul, Minn., for the summer.

Dr. L. R. Huffman (Ohio '93) of Paris, Ky., is engaged in the breeding of Large Type Poland China Hogs.

Lt. Ralph B. Stewart (St. Jos. '16) has been transferred to the Office of the Surgeon General, Washington, D. C.

Dr. B. J. Eno (Ohio '05) has left Vergennes, Vt., and is now located at 156 Thorndike St., East Cambridge, Mass.

Dr. Robert E. Smith (McK. '08) has left Albert Lea, Minn., and is now at Lafayette, Ind. Address, 1904 Perrine St.

Dr. F. J. Pilon (Chi.) of Champaign, Ill., has retired from active practice and will engage in farming near Champaign.

Dr. George T. Van Buskirk (U. P. '09) formerly of Willow Grove, Pa., is now with the B. A. I., stationed at Baltimore, Md.

Lt. H. K. Moore (K. C. V. C. '16) is now at the Quartermasters' Intermediate Depot, 1819 W. Pershing Road, Chicago, Ill.

Dr. Raymond S. Huff (U. P. '16), writes as follows: "The JOURNAL has shown improvement since the change. Keep it up."

Dr. B. F. Davis (K. C. V. C. '07), of Cheyenne, Wyoming, has been elected Secretary of the Wyoming Stock Growers' Association.

Dr. Perry Zenor, in the employ of the Bureau of Animal Industry, has been transferred from Helena, Montana, to Sioux City, Iowa.

Dr. S. H. Buck (McK. '14), of Marquette, Mich., has relinquished his veterinary practice and is now engaged in the dairy business.

Dr. G. A. Scott (Ont. '86) of Waterloo, Iowa, was badly hurt in an automobile accident recently, when his machine turned turtle.

Dr. D. M. Purdy (K. S. A. C. '17) has removed from Vinita, Okla., to Wichita, Kansas. He is located at 1406 South Main Street.

Dr. Ray Van Orman (Corn. '08), of Baltimore, Md., was called to Ithaca, N. Y., recently by the death of his father, Jacob Van Orman.

Dr. Archibald Freer (Corn. '13) has given up his practice at Ellensville, N. Y., to take up work with the Dairymen's League of New York.

Dr. E. C. W. Schubel (U. S. C. V. S. '11) is now in charge of the branch office of the Missouri Valley Serum Co., at 636 E. Grand Ave., Des Moines, Iowa.

Dr. R. G. Flowers (Ont. '06), the oldest member of the A. V. M. A., in Fort Worth, Texas, writes: "I do not want to miss a copy of the JOURNAL."

Dr. C. H. Davis (Chi. '20) is with the Hereford Hampshire Home of the Crossett Lumber Company, of Crossett, Ark., with headquarters at Bastrop, La.

Dr. Jacob Kalmansohn (Cinn. '17), has been transferred from Sioux Falls, S. D., to Sioux City, Iowa. His address is 323 Exchange Bldg., Stock Yards Station.

Dr. Irwin Owens (K. C. V. C. '03) has been transferred from Fort Worth, Texas, to South St. Paul, Minn. His address is Room 633 Live Stock Exchange Building.

Dr. Russell A. Runnells (Mich. A. C. '16), of East Lansing, Mich., has resumed his post-graduate studies in the Summer School of the University of Michigan.

Dr. Raymond R. Birch (Corn. '12) and family have left Ithaca on an automobile trip that will consume most of the summer. They will go as far west as Kansas.

Dr. W. B. Cook (Ind. '10) has removed from Paterson to Perth Amboy, N. J. Although not engaged in veterinary work, he insists on getting his JOURNAL each month.

Dr. O. N. Schultz, of Latimer, Iowa, conducts a free small animal clinic every Friday morning. His swine and chicken practice has been materially augmented in this way.

Dr. M. J. Kemen, who has been assigned to hog cholera work in the Bureau of Animal Industry in Mississippi, has been transferred to the meat inspection service at Chicago, Illinois.

Dr. J. F. Bullard (Corn. '22) has relinquished his practice at Walton, N. Y., to accept a teaching position in the Division of Veterinary Medicine, Kansas State Agricultural College, at Manhattan.

Dr. W. S. Rader (K. C. V. C. '10), removed from Broken Bow, Okla., to Smackover, Ark., several months ago. He successfully passed the recent examinations of the Arkansas State Board.

Dr. H. J. Metzger (Corn. '18), Assistant Professor in the Extension Service of Cornell University, has returned to Ithaca, after a trip to Ohio, Wisconsin and Minnesota, in the interests of his extension work.

Dr. Louis A. Klein (U. P. '97), Dean of the Veterinary School, University of Pennsylvania, is a member of the Committee on Standards and Methods of the American Association of Medical Milk Commissions.

Dr. S. Brenton (Ont. '80) of Detroit, Mich., has recovered from his recent illness and is planning to attend the convention in Montreal. Dr. Brenton was recently elected an honorary member of the Persian Cat Club.

Dr. C. T. Snyder (K. C. V. C. '14) has been appointed Inspector-in-charge at Ottawa, Ill. He was formerly at National Stock Yards, Ill. Present address: c/o Chicago Butchers' and Illinois Farmers' Packing Company.

Dr. E. M. Gildow (Wash. S. C. '22) has joined the staff of the Department of Veterinary Science, University of Wisconsin, and is devoting half-time to instruction work and half-time to post-graduate work, majoring in animal chemistry.

Dr. Fay F. Russell (Ont. '13) of Concord, N. H., has been commissioned as First Lieutenant, Vet. Off. Res. Corps, and assigned to the 387th Infantry, 97th Division, U. S. A. Dr. Russell was with the A. E. F. in France during the World War.

Dr. J. F. Shigley (Corn. '15) terminated his connection with the Beebe Laboratories on July 14, 1923. He will remain in St. Paul, Minn., and engage in private practice, specializing in the diseases of breeding animals. His address is 1282 Charles St.

Dr. F. R. Beaudette (K. S. A. C. '19), who has spent the past four years specializing in poultry diseases at the Kansas State Agricultural College, has resigned his position there to accept a similar one at the New Jersey Agricultural Experiment Station, at Rutgers.

Dr. J. G. Catlett (U. S. C. V. S. '16) has resigned his position as Assistant State Veterinarian of Florida, to accept a position as Inspector-in-charge, at the Southeastern Packing Company, Fort Lauderdale, Florida, under the jurisdiction of the Board of Health of West Palm Beach.

Dr. C. M. Carpenter (Corn. '17), with his family, has returned to Ithaca, N. Y., from California, where he has spent a year engaged in research work at the University of California, on an exchange basis with Dr. Jacob Traum (Corn. '05) who has been at Cornell University for the past year.

Dr. C. L. Sanders (Cinn. '16) has associated himself in practice with Dr. R. H. Aull, of Dayton, Ohio. Dr. Sanders spent four years with the B. A. I., in meat inspection and tuberculosis eradication work; and two years as Supervising Inspector, Dairy and Food Division, Department of Health, of Akron, Ohio.

Dr. J. Payne Lowe (Amer. V. C.) of Passaic, N. J., has been reappointed, by Governor Silzer, as a member of the N. J. State Board of Veterinary Medical Examiners. Dr. Lowe has already served six years on the Board. The other appointees are: Drs. Robert Mosedale, of Bernardsville; Charles E. Magill, of Haddonfield; and Ronald Butterworth, of Paterson.

Dr. J. W. Kalkus (K. C. V. C. '09), Professor of Pathology and Histology at the State College of Washington, at Pullman, left for Puyallup, July first, to take charge of the work of investigating animal diseases at the Western Washington Experiment Station. The study of infectious abortion and redwater will receive the most of Dr. Kalkus' attention. He will retain his connection with the Agricultural Experiment Station at Pullman.

Dr. B. H. Edgington (Chi. '07), formerly State Veterinarian of Ohio, has been appointed veterinary pathologist at the Ohio Agricultural Experiment Station, at Wooster. This is a new position, created at the recent session of the Legislature, in answer to the urgent demand for more research work in animal diseases, and in recognition of the necessity for a trained pathologist in connection with the extensive line of research work being conducted at the Station.

Dr. Wm. Henry Kelly (N. Y. C. V. S. '89), of Albany, N. Y., accompanied by Mrs. Kelly and their daughter, Ruth, sailed for Europe on the White Star Steamer Olympic, June 30. They will visit the native home of Dr. Kelly's father, on the Isle of Man, and a number of the European veterinary colleges. Before returning they expect to see parts of England, Scotland, Wales, France, Switzerland, Italy, Belgium and Holland. They plan to return via Montreal in time for the A. V. M. A. Convention.

LADDIE BOY

We've all heard and read of you, Laddie Boy,
How in glee you romp and bark,
In your rank there are but few, Laddie Boy,
In dogdom you've made your mark.
But I wonder if you think,
As the sunlight makes you blink,
That your life is rosy pink, Laddie Boy.

In that mansion grand and white, Laddie Boy,
Where you are a favored pet,
Everything must be just right, Laddie Boy,
Though I fear you sometimes fret.
Don't you care much of a rap
For a good old fashion scrap,
Just to show your pep and snap, Laddie Boy?

There's a heap of fun you miss, Laddie Boy,
And at times you must be glum,
And I know full well you wish, Laddie Boy,
That you had a boyish chum.
And you must be quite sedate
To be classed a dog of state,
But that's just your doggone fate, Laddie Boy.

There are those who envy you, Laddie Boy,
And would like to have your den,
But they're shy a ribbon blue, Laddie Boy,
And that goes for dogs and men.
Though the chance they'd gladly hail
Their wishes will not avail,
Just keep on wagging your tail, Laddie Boy.

Keep close watch on Warren G., Laddie Boy,
Get on to his point of view,
You both have high pedigree, Laddie Boy,
And he knows you're staunch and true.
May all men in this fair land
Strive to learn and understand,
And extend a helping hand, Laddie Boy.

T. P. WHITE.

IMMUNIZATION OF SWINE AGAINST CHOLERA

It is apparent from packing-house reports that some veterinary practitioners and hog owners continue to inject the serum into the hams in immunizing swine against cholera. The Bureau of Animal Industry has been advising against this practice, and several years ago instructed its field veterinarians to make their injections at some other place than the ham, preferably in the axillary space or flank. The reason for the Bureau's advice on this matter is apparent from the following letter which was written by a New York hog slaughterer to a commission firm from which it buys slaughter stock:

> In a car shipped out of your yards on June 12th, containing 162 hogs (cars 2551 and 26958) we have run into a condition to which we wish to call your attention.
>
> This load of hogs was killed on Friday (June 18) and cut up on Saturday. The car yielded 161 hogs when dressed. When cut we obtained 322 hams. Out of this lot 110 hams were immediately made into an article on which the skin and fat is removed and the bone taken out. Through this process we found 40 pieces that were bruised by inoculation and unfit for human consumption.
>
> A loss of this kind, as you will readily understand, is not wholesome and surely cannot be endured by a packer for any length of time. Out of the balance we are certain of obtaining a certain amount of returns from the same cause.
>
> Bruises from inoculation are never discernible from the outside of a ham and only noticeable when the bone is removed.
>
> What we desire you to do on this shipment is to kindly trace it back from the shipping point. Advise us of the locality and, in the future when buying hogs for our account, kindly keep away from this location as much as possible. If there is a live stock association in this territory it would be wise, if the hogs are inoculated, to have the injection in a different part of the anatomy other than the ham and have it done by clean and sterilized instruments so the hogs do not become infected and are not roughly handled. This can all be done in the interests of the industry.

NEW PRESIDENT FOR PITMAN-MOORE

Announcement has been made that Mr. James E. Bartlett has acquired a controlling interest in the Pitman-Moore Company, of Indianapolis, and has assumed his duties as President and General Manager. Mr. Bartlett recently terminated a connection of over thirty years with Parke, Davis and Company, during which time he held many responsible positions, including the presidency. Mr. Bartlett's long association with the pharmaceutical and biological interests should be of enormous value to the Pitman-Moore Company in extending even further the wonderful business built up by the late Mr. Harry C. Moore. It was from the estate of Mr. Moore that Mr. Bartlett acquired his interest. There will be no change of policy under the new management.

INDIANA VETERINARY COLLEGE REORGANIZED

The reorganization of the Indiana Veterinary College has been announced. The petition for a receivership, filed on the part of some of the minority stockholders, has been withdrawn. The College is solvent and has been so at all times. The disgruntled stockholders are no longer affiliated with the College in any way whatsoever.

The 32nd session will begin September 20, 1923 and every preparation is being made to handle a good enrollment of students in the fall. The faculty has been strengthened by the addition of Dr. L. A. Merillat, of Chicago, Ill., Dr. O. L. Boor, of Muncie, Ind., Dr. J. L. Axby, of Lawrenceburg, Ind., and several other prominent veterinarians.

The annual short course will be given in January, 1924, as usual.

SOMETHING WRONG

Translated into food, at the prices the farmer gets, it takes sixty-three and one-half dozen, or 762 eggs to pay a plasterer for one day of eight hours work in New York City. It takes seventeen and one-half bushels of corn, or a year's receipts from half an acre, to pay a bricklayer one day. It takes twenty-three chickens weighing three pounds each to pay a painter for one day's work in New York. It requires forty-two pounds of butter, or the output from fourteen cows, fed and milked for twenty-four hours, to pay a plumber fourteen dollars a day. To pay a carpenter for one day's work, it takes a hog weighing 175 pounds, representing eight months' feeding and care.

—*Dearborn Independent.*

CLASSIFIED ADS

VETERINARY PRACTICE, POSITIONS, ETC., furnished and handled for sale in 48 States. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all States. F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.
Established 1904.

ILLINOIS PRACTICE FOR SALE. Complete hospital and veterinary equipment. Low price for quick sale. Take part cash. In corn belt. Address, 3374, c/o F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

KANSAS VETERINARY PRACTICE FOR SALE: Did $5000 in past year. No graduate competition. Good country, stock raising. Practice will go to $6000 year. County seat, three railroads. Address, 3375 c/o F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

GRADUATE VETERINARIAN. Seven years experience. Desires position as assistant to practitioner. Town or small city preferred. Address, Hoosier, c/o A. V. M. A., 735 Book Bldg., Detroit, Mich.

WANTED

SECRETARIES of local, county, state and provincial veterinary associations to send in the **date** and **place** of the **next meeting,** as soon as definitely fixed.

SECRETARIES of state veterinary examining boards to send in the **date** and **place** for holding the **next examination,** as soon as definitely fixed.

MEMBERS of the Association to send in the **names of Veterinarians worthy of membership in the A. V. M. A.,** so that we may get in touch with prospective members through our Resident State and Provincial Secretaries.

PRACTITIONERS to send in **case reports and short articles** on practical subjects of interest to **practitioners.**

NAMES of members who are planning to attend the **meeting in Montreal** next August, (a) by rail and (b) by auto.

American Veterinary Medical Association
H. PRESTON HOSKINS, Secretary-Editor
735 Book Building
DETROIT, - MICHIGAN